NEC VHS PAL

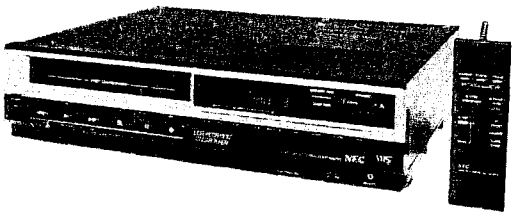
MODEL N9013G
MODEL N9014G

COLOR VIDEO CASSETTE RECORDER

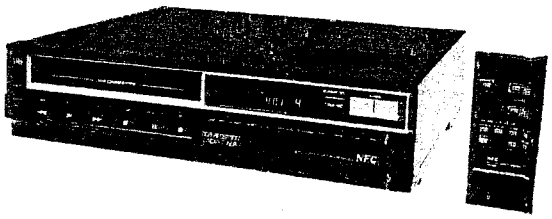
SERVICE MANUAL

ORDER NO. 549-91-0288

Better Service
Better Reputation
Better Profit



MODEL N9013G



MODEL N9014G

SPECIFICATIONS

Fromat	: VHS PAL standard
Recording system	: Rotary, slant azimuth two-head helical scan system
Video signal system	: PAL colour and CCIR monochrome signal, 625 lines.
Tape width	: 12.65 mm (1/2 inch)
Tape speed	: 23.39 mm/s
Maximum recording time	: 240 min. with E-240 video cassette
Temperature operating	: 5°C to 40°C (41°F to 104°F)
storage	: -20°C to 60°C (-4°F to 140°F)
Channel coverage	: VHF BAND VL, 47 – 118 MHz VHF BAND VH, 118 – 300 MHz UHF BAND U, 470 – 862 MHz
Antenna output	: UHF channels 30 – 39 (adjustable) 75 ohms, unbalanced
Power consumption	: 32 Watts
Power requirement	: 220V ~ , 50/60 Hz

Video

Input	: 0.5 to 2.0 Vp-p, 75 ohms unbalanced
Output	: 1.0 ±0.1 Vp-p, 75 ohms unbalanced
S/N ratio	: More than 43 dB
Horizontal resolution	: 250 lines

Audio

Input	: -20 dBs, 47k ohms unbalanced
Output	: -4 dBs, high impedance load
S/N ratio	: More than 40 dB
Frequency range	: 70 Hz to 10,000 Hz
Timer	: Maximum 21-day/1-event (N9014G – 4-event)
Dimensions	: 430 mm (W) x 105 mm (H) x 375 mm (D) (16-15/16" x 4-3/22" x 14-13/1 7")
Weight	: 7.6 kg
Provided accessories	: Remote control unit Antenna cable

Design and specifications subject to change without notc

NEC Corporation

TOKYO, JAPAN

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Important Safety Precautions

Prior to shipment from the factory, the products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▒▒) parts are critical for safety.
   Replace only with specified part numbers.
   Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

4. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors

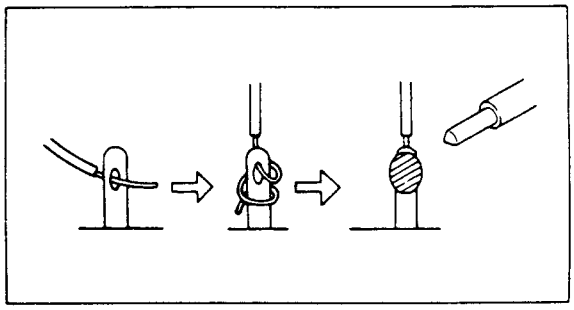


Fig. 1

5. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

6. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

7. Check that replaced wires do not contact sharp edged or pointed parts.

8. When a power cord has been replaced, check that 10–15 kg of force in any direction will not loosen it.

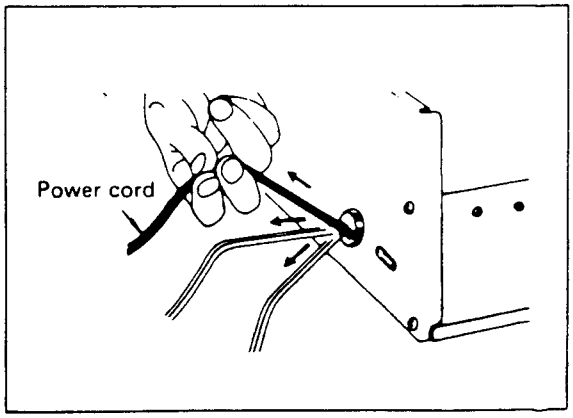


Fig. 2

9. Also check areas surrounding repaired locations.

10. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the parts specified. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions. Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. **Insulation resistance test**
   Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table below.

2. **Dielectric strength test**
   Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.) See table below.

3. **Clearance distance**
   When replacing primary circuit components, confirm specified clearance distance (d),(d') between soldered terminals, and between terminals and surrounding metallic parts. See table below.

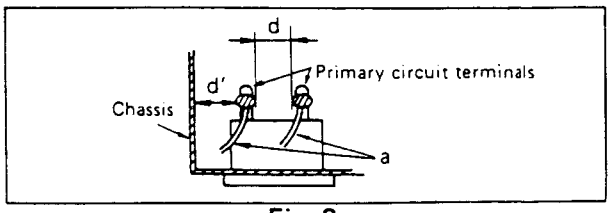


Fig. 8

Table 1: Ratings for selected areas

AC Line Voltage	Region	Insulation Resistance	Dielectric Strength	Clearance Distance(d),(d')
100 V	Japan	≧ 1 MΩ/500 V DC	1 kV 1 minute	≧ 3 mm
110 to 130 V	USA & Canada	– – –	900 V 1 minute	≧ 3.2 mm
* 110 to 130 V 200 to 240 V	Europe Australia	≧ 10 MΩ/500 V DC	4 kV 1 minute	≧ 6 mm(d) ≧ 8 mm(d') (a. Power cord)

* Class Π model only.
Note. This table is unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

4. **Leakage current test**
   Confirm specified or lower leakage current between B(earth ground, power cord plug prongs) and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).

   Measuring Method: (Power ON)
   Insert load Z between B(earth ground,power cord plug prongs) and exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure and following table.

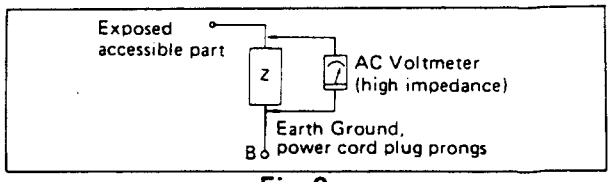


Fig. 9

Table 2: Leakage current ratings for selected areas

AC Line Voltage	Region	Load Z	Leakage Current (i)	Earth Ground (B) to:
100 V	Japan	1 kΩ	i ≦ 1m A rms	Exposed accessible parts
110 to 130 V	USA & Canada	0.15 μF, 1.5 kΩ	i ≦ 0.5m A rms	Exposed accessible parts
110 to 130 V 200 to 240 V	Europe Australia	2 kΩ	i ≦ 0.7 m A peak i ≦ 2 m A dc	Antenna earth terminals
		50 kΩ	i ≦ 0.7 m A peak i ≦ 2 m A dc	Other terminals

Note. This table is unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

WARNING

1. This set is for exclusive use with the PAL colour system (system B and G).
2. SECAM (system B and G) colour programmes might be recorded in certain areas but there is no interchangeability of these recorded cassette tapes with other PAL-VHS recorders or SECAM-VHS recorders.
3. Please use the exclusive SECAM-VHS recorder in SECAM broadcasting areas.
4. Please use only PAL prerecorded cassette tapes or PAL signals which have been recorded with the PAL-VHS system.
5. For camera recording, connect a video camera built to the PAL standard.

IMPORTANT: It is permissible to record television programmes only in the event that third party copyrights and other rights are not violated.

WARNING:
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

CAUTION

Dangerous voltage inside. Refer internal servicing to qualified service personnel. To prevent electric shock or fire hazard, remove the power cord from the AC outlet prior to connecting or disconnecting any signal lead or aerial.

MAINS POWER SWITCH

The mains switch is located on the rear connector panel. Setting this switch to OFF removes all applied power from the set including the timer clock. Switching on or off the recorder section is performed with the secondary power switch, labelled OPERATE, on the front panel.

NOTE: The rating plate and the safety caution are on the rear of the unit.

CAUTION: When you are not using the N9013G for a long period of time, it is recommended that you disconnect the power cord from AC outlet.

CAUTION: When you are not using the N9014G for a long period of time, it is recommended that you disconnect the power cord from AC outlet.

GENERAL NOTES: (N9013G/N9014G)

- This recorder is designed to operate in a horizontal position.
- Do not install the recorder in a location near heat sources, such as radiators, air ducts or in a place subject to direct sunlight, excessive dust, mechanical vibration or shocks.
- Allow adequate air circulation to prevent internal heat build-up. Do not place the recorder on surfaces (rugs, blackets, etc.) or near materials (curtains, drapes) that may block the ventilation holes.
- Keep the recorder and video cassettes away from strong magnetic fields.
- After playing a tape, remove the video tape from the compartment if the recorder is not to be used any length of time.
- Do not transport the recorder with a video cassette in place.
- To disconnect the cord, pull it by the plug. Never pull the cord itself.
- Generally, head cleaning by yourself is not required. Should snow or streaks appear in the playback picture after having used the recorder for an extended period of time, consult your nearest NEC dealer.
- Should any liquid or solid object fall into the cabinet, unplug the recorder and have it checked by qualified personnel before operating it any further.
- Save the original shipping carton and packing material; they will come in handy if you ever have to ship your recorder.
- For maximum protection, repack the recorder as it was originally packed at the factory.
- This machine is designed to record and play back the PAL colour and CCIR monochrome video signal.
- Do not place any magnetism emitting device, e.g. TV set, etc., on top of the VCR.
  Otherwise, noise or other screen disturbances may occur so be careful. Also, do not place any object heavier than 15 kg on the VCR.

FEATURES (N9013G)

10-function wired remote
If you prefer to operate the VCR and select TV channels from the comfort of your sofa, this model is for you. All basic VCR operations (including PLAY, STOP, FF, REW, REC, PAUSE/STILL, CUE, REVIEW) are included on this wired unit, plus channel selection (UP/DOWN).

Maximum 21-day/1-event timer recording
The user can programme the VCR to automatically record 1 TV programme of this choice. It is also possible for the timer to be set to record the same programme every day.

Segment recording
If you wish to immediately initiate recording without bothering with the timer, the segment recording feature may be used. It allows 30 minutes of recording with each push of the SEGMENT REC button (up to a maximum of 5 hours).

Picture search function
Picture search is provided to quickly speed through unwanted scenes or commercial messages. It operates at 7 times normal speed (both forward and backward).

Motorized front-loading cassette system – convenient, sure and space saving.
Still frame – to freeze action.
Auto rewind – at the end of play, the tape automatically rewinds to the beginning.
Electronic counter – permits you to return precisely to any specific location of the tape.

FEATURES (N9014G)

11-function infrared remote
A remote control (supplied) permits armchair video viewing and control. Buttons on the control include: PLAY, STOP, FF, REW, REC, PAUSE/STILL, CUE, REVIEW, channel selection (UP/DOWN), and OPERATE control.

Maximum 21-day/4-event timer recording
The user can programme the VCR to automatically record up to 4 TV programmes of his choice over a 3 week period. Service recording is also possible for automatic recording of daily or weekly programmes.

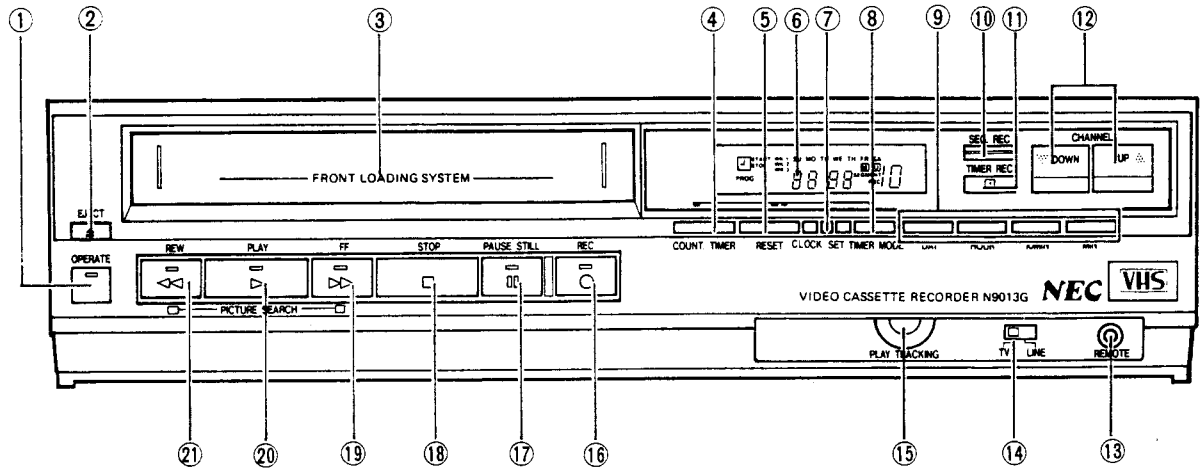
Segment recording
If you wish to immediately initiate recording without bothering with the timer, the segment recording feature may be used. It allows 30 minutes of recording with each push of the SEGMENT REC button (up to a maximum of 5 hours).

Picture search function
Picture search is provided to quickly speed through unwanted scenes or commercial messages. It operates at 7 times normal speed (both forward and backward).

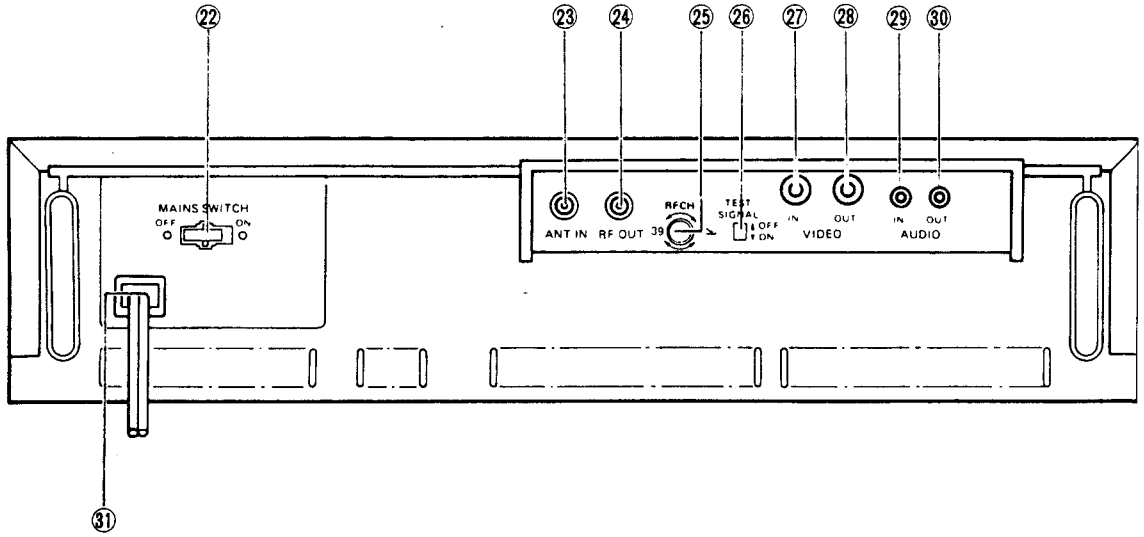
Motorized front-loading cassette system – convenient, sure and space saving.
Still frame – to freeze action.
Auto rewind – at the end of play, the tape automatically rewinds to the beginning.
Electronic counter – permits you to return precisely to any specific location of the tape.

CONTROLS AND COMPONENTS (N9013G)

FRONT VIEW



REAR VIEW

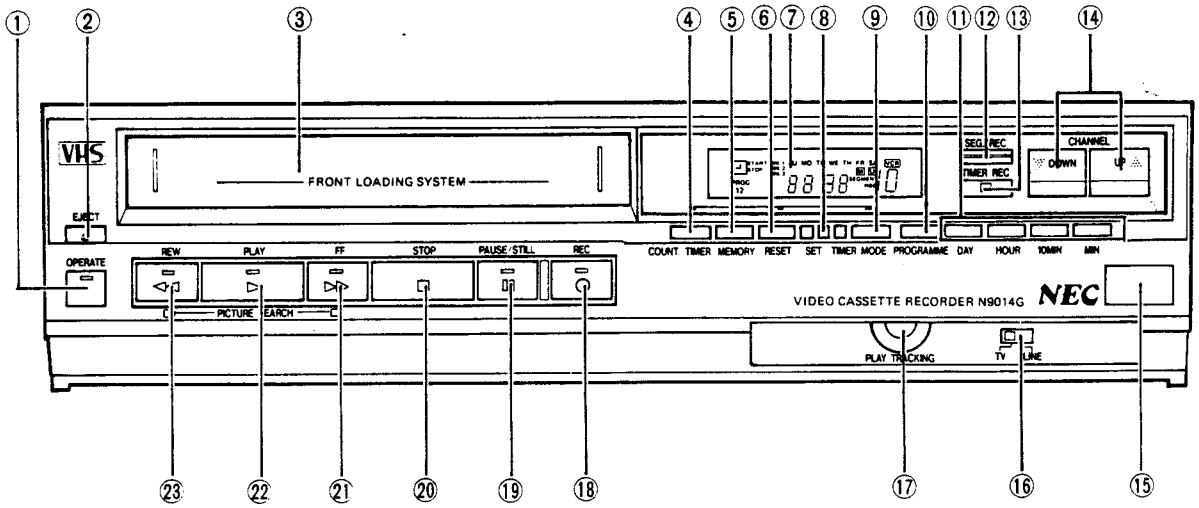


No.	Name	Page	No.	Name	Page
①	OPERATE button	11	⑰	PAUSE/STILL button	15
②	EJECT button	14	⑱	STOP button	15
③	Cassette holder	14	⑲	FAST FORWARD/SEARCH button	15
④	COUNTER/TIMER button	26	⑳	PLAY button	23
⑤	RESET button	21	㉑	REWIND/SEARCH button	15
⑥	Display	12	㉒	MAINS SWITCH	10
⑦	CLOCK SET button	13	㉓	ANT IN terminal	10
⑧	TIMER MODE button	13	㉔	RF OUT connector	10
⑨	Time setting buttons	13	㉕	RF converter frequency adjustment screw	11
⑩	SEGMENT REC button	22	㉖	TEST SIGNAL switch	11
⑪	TIMER REC button	16	㉗	VIDEO IN terminal	27
⑫	CHANNEL UP/DOWN buttons	12	㉘	VIDEO OUT terminal	27
⑬	Remote control jack	24	㉙	AUDIO IN terminal	27
⑭	Input select switch	12	㉚	AUDIO OUT terminal	27
⑮	Tracking control knob	23	㉛	Power Cord *	7
⑯	REC button	15			

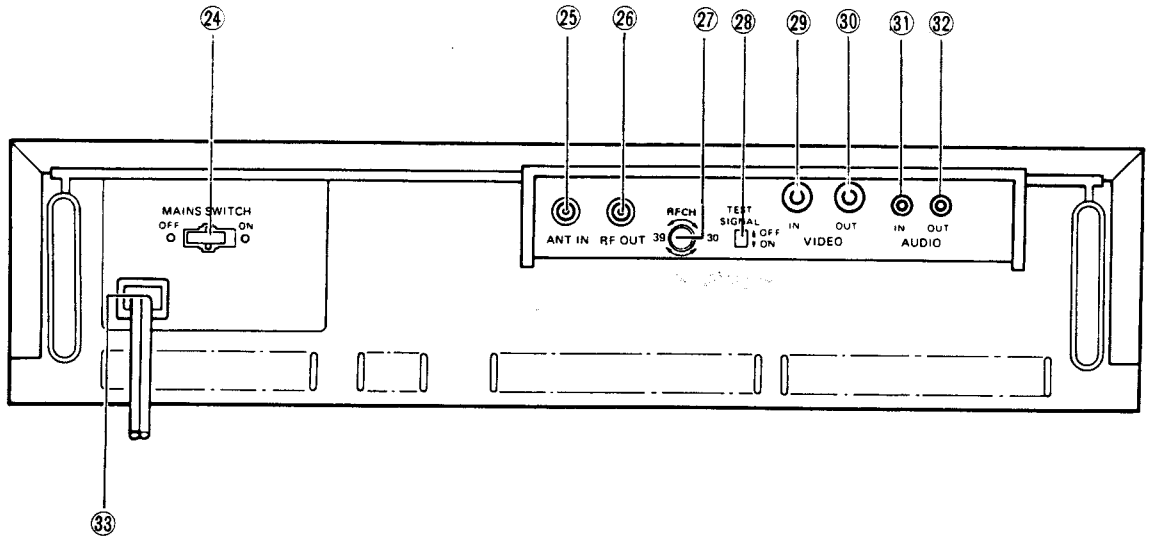
Power cord *
Connect to 220V~ , 50/60 Hz

CONTROLS AND COMPONENTS (N9014G)

FRONT VIEW



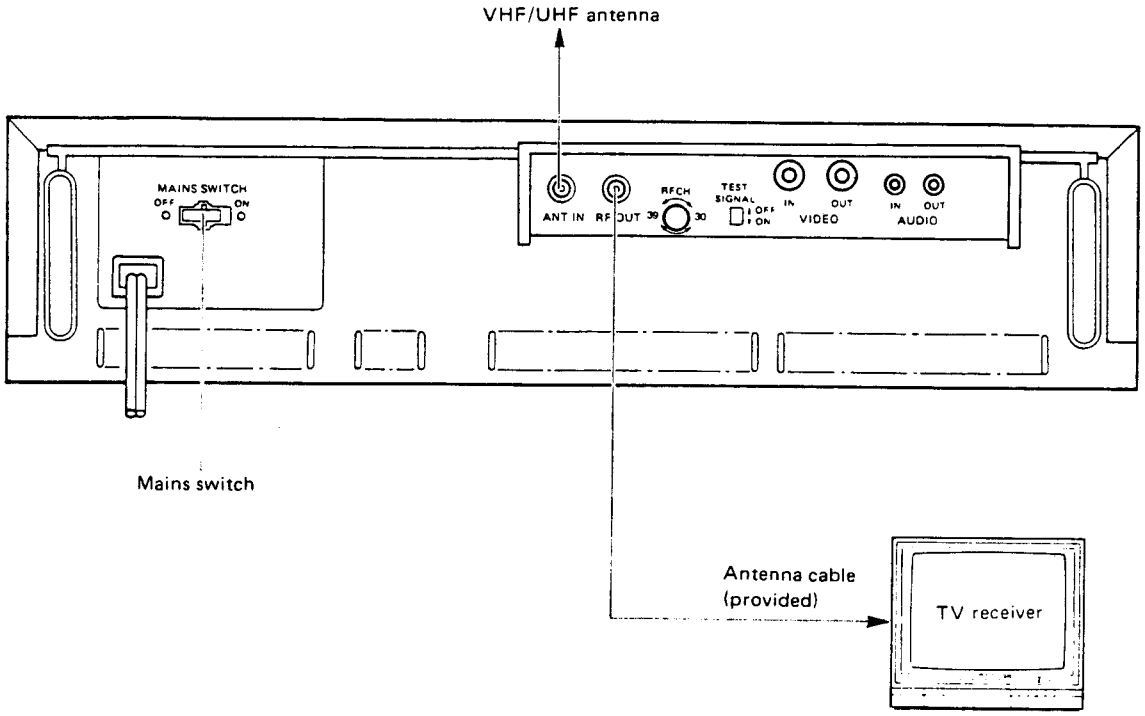
REAR VIEW



No.	Name	Page	No.	Name	Page
①	OPERATE button	11	⑱	REC button	26
②	EJECT button	14	⑲	PAUSE/STILL button	15
③	Cassette holder	14	⑳	STOP button	15
④	COUNTER/TIMER button	26	㉑	FAST FORWARD/SEARCH button	15
⑤	MEMORY button	26	㉒	PLAY button	15
⑥	RESET button	19	㉓	REWIND/SEARCH button	10
⑦	Display	12	㉔	MAINS SWITCH	10
⑧	SET button	13	㉕	ANT IN terminal	10
⑨	TIMER MODE button	13	㉖	RF OUT connector	10
⑩	PROGRAMME button	16	㉗	RF converter frequency adjustment screw	10
⑪	Time setting buttons	13	㉘	TEST SIGNAL switch	11
⑫	SEGMENT REC button	22	㉙	VIDEO IN terminal	27
⑬	TIMER REC button	19	㉚	VIDEO OUT terminal	27
⑭	CHANNEL UP/DOWN button	12	㉛	AUDIO IN terminal	27
⑮	Infrared remote sensor	25	㉜	AUDIO OUT terminal	27
⑯	Input select switch	12	㉝	Power cord *	9
⑰	Tracking control knob	23			

Power cord*
Connect to 220V~, 50/60 Hz.

ANTENNA CONNECTION (N9013G/N9014G)



Procedure

- Remove the antenna cable from the TV receiver and reconnect to the VCR as illustrated. The VCR is then ready to record off-air programmes.
- Connect the VCR to the TV using the antenna cable (provided) as illustrated. The TV is then ready to receive TV broadcast programmes as well as accommodate video cassette playback.

Note:

Even when you are not using the VCR, the rear panel Mains switch should be set to ON in order to be able to view TV broadcasts with this connection.

For reference

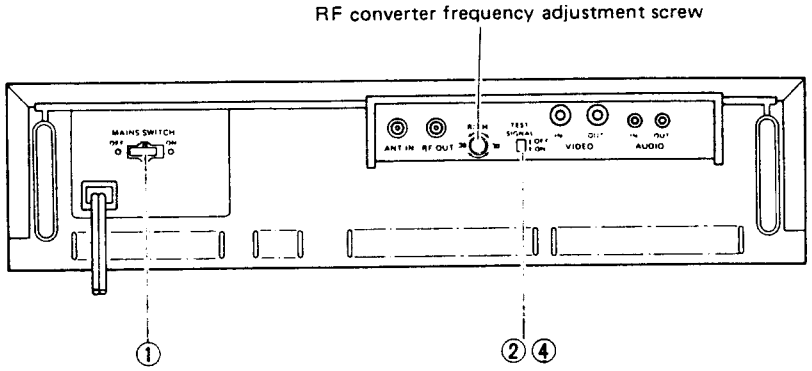
- Previously, when you were using only the TV, broadcast signals went to the TV directly from the antenna. Now, after you have connected the VCR to the TV, broadcast signals enter the VCR directly from the antenna and go to the TV through the VCR.
- In order to transmit entering broadcast signals to the TV, an antenna circuit is built into the VCR.
  This antenna circuit must function as long as you are viewing TV programmes even through you are not using the VCR. If the Mains switch is set to OFF, the VCR'S antenna circuit is also switched off. In this state, the connected TV cannot properly receive off-air TV programmes for good viewing condition. Therefore, normally, keep the Mains switch set to ON.

VIDEO CHANNEL SETTING (N9013G/N9014G)

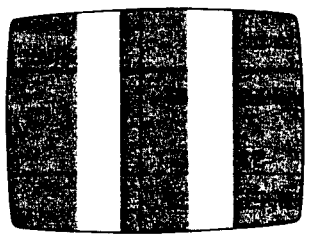
Resetting the RF converter output channel

The built-in RF converter permits playback of video and audio recordings through a TV. The signals from the RF converter are viewed through a vacant channel not used for broadcasting in viewing area.

The converter channel of all units is set to UHF channel 36 prior to shipment. Setting your TV receiver to UHF channel 36 may provide video playback. However, to obtain the best possible reproduction on your TV receiver, accurate adjustment to the RF converter output is required.



① Set the Mains switch to ON and press the front panel OPERATE button to ON. Turn on the TV.
② Set the test signal switch to ON.
③ Adjust the TV in the vicinity of UHF channel 36 until you bring in the two white signal bars on the screen as illustrated. This setting is now the VIDEO CHANNEL of the TV to which the VCR is connected.
④ Set the test signal switch to OFF.



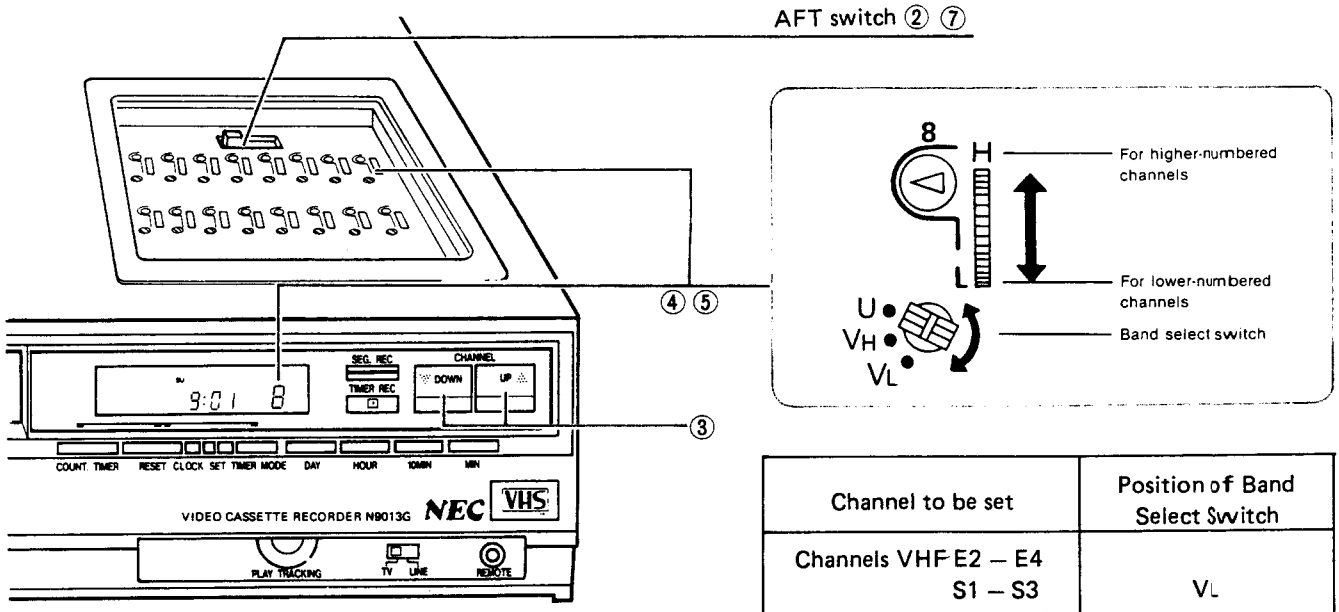
Notes:

- When you adjust the TV to channel 36 for video playback, if some interference noise is seen on the screen because of broadcasts on neighbouring channels or if your preset broadcasts should be affected in picture quality, it is necessary to adjust more accurately the RF converter output.
- For this purpose, insert a screwdriver into a hole provided on the rear of the set and re-adjust the RF converter frequency adjustment screw in minute steps. Then tune the TV once again until a clear picture is obtained.
  This adjustment requires extreme precision and must be done with the utmost care. We recommend that you consult your NEC dealer for making this adjustment.
- Be sure to set the test signal switch to OFF after VIDEO CHANNEL tuning has been completed.
- If a prerecorded VHS cassette is available, TV adjustment for VIDEO CHANNEL setting is also possible using it to obtain a playback picture. Insert the cassette and operate the VCR for playing back the cassette. Then tune the TV to obtain clear pictures and sound while monitoring the playback picture on the TV screen.
- If the TV is not provided with an AFC circuit, perform fine tuning of the TV receiver when you are actually viewing video cassettes.

CHANNEL PRESETTING (N9013G/N9014G)

This VCR has a built-in electronic tuner that is capable of presetting up to 16 television channels. Once preset, any channel may be selected by pressing the channel up/down buttons.

Preparation
- Press the OPERATE button to turn on.
- Turn TV on and adjust the channel to the video channel.
- Set the input select switch to TV.



Channel to be set	Position of Band Select Switch
Channels VHF E2 – E4 S1 – S3 M1 – M2	VL
Channels VHF E5 – E12 M3 – M10	VH
Channels UHF 21 – 69	U

(in West Germany, Belgium)

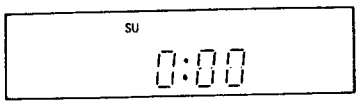
Channel to be set	Position of Band Select Switch
Channels VHF E2 – E4 X, Y, Z S1 – S2	VL
Channels VHF E5 – E12 S11 – S20	VH
Channels UHF 21 – 69	U

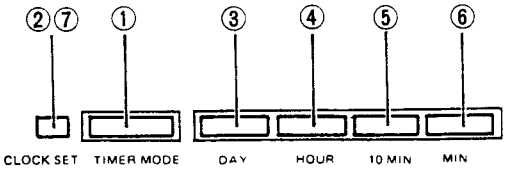
(in Switzerland)

① Open the channel preset compartment.
② Set the AFT switch to OFF.
③ Push the channel up/down buttons to be preset. Preset channel number is indicated in the display.
④ Set the band select switch corresponding to the indicated channel in the display. When this switch is set to U, mark lights in the display.
- If it is too difficult for you to set the band select switch, use the white stick (provided).

⑤ Turn the tuning knob until the desired station is properly tuned in. The channel indicating meter shows the approximate location of the tuning control. When the picture appears, slowly turn the tuning knob to the upper until a herringbone pattern appears in the coloured part of the picture; then turn the knob back until the herringbone pattern just disappears and the picture is clear.
⑥ Repeat steps ③ through ⑤ for the other channels.
⑦ Set the AFT switch to ON when all stations have been preset up as desired.

TIME SETTING (N9013G/N9014G)





For example:

Set the clock for "WE PM 7:23 (19:23)"

- The clock system of the VCR is the twenty-four-hour system. PM 7:23 shows 19:23 in the display.

① Press the TIMER MODE button to set PRESENT TIME mode.

② Press the CLOCK SET button and keep it pressed until the end of the time setting procedure.

③ Press the DAY button to set the WE.

④ Press the HOUR button to set the 19.

⑤ Press the 10 MIN button to set the 2.

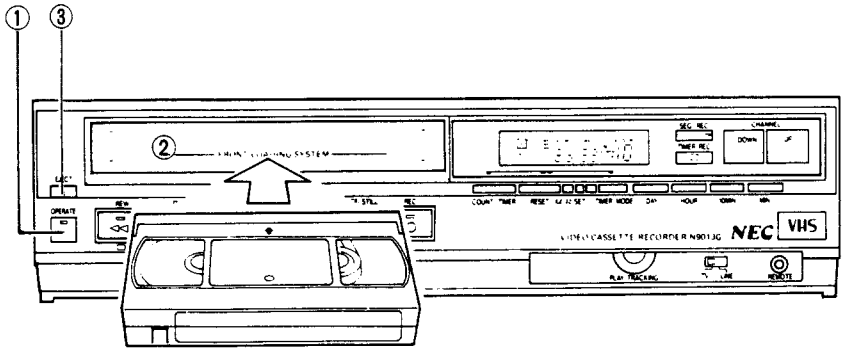
⑥ Press the MIN button to set the 3.

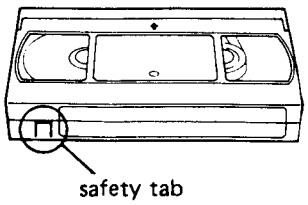
⑦ When the CLOCK SET button is released, the clock starts operating.

NOTE:

This timer works by AC reference. Check the present time about once a month and if necessary reset time.

THE VIDEO CASSETTE (N9013G/N9014G)





Inserting a video cassette

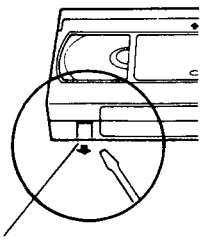
① Press the OPERATE button to turn on.
(The power lamp lights.)

② Insert the video cassette as shown. The VCR draws it inside automatically.

Removing a video cassette

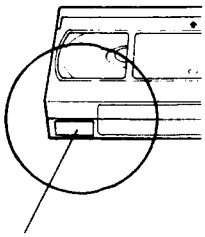
③ Press the EJECT button.

to prevent accidental erasure



break off the tab with a screwdriver

to record again



cover the hole with adhesive tape

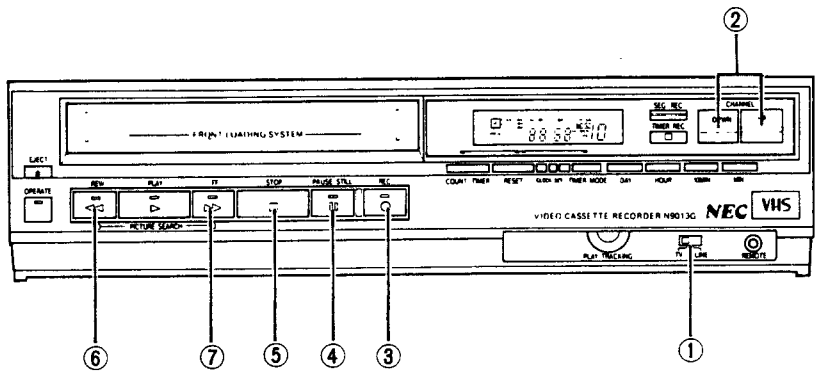
[Maximum recording time]

types of video cassette	
E-240	240 min.
E-180	180 min.
E-120	120 min.
E-60	60 min.
E-30	30 min.

TV PROGRAMME RECORDING (N9013G/N9014G)

Preparation

- Press the OPERATE button to turn on.
- Insert a video cassette with safety tab.
- Turn TV on and adjust the channel to the video channel.



① Input select switch is set to TV.

② Choose the programme to be recorded pressing the Channel up/down buttons.

③ Press the REC button. The record lamp lights and recording starts. If the safety tab is broken off, the video cassette will be ejected.

④ If there is part of the programme you do not want to record or you want to change recording programme, press the PAUSE/STILL button.
(The pause/still lamp lights)

- If you want to change the recording programme, press the Channel button.
- Press the REC button or the PAUSE/STILL button to continue the recording.
- If you leave the VCR in pause mode for more than 5 minutes, the unit will record automatically to protect the tape and the video heads.

⑤ To finish the recording, press the STOP button.

⑥ Press the REW/SEARCH button to rewind the tape.

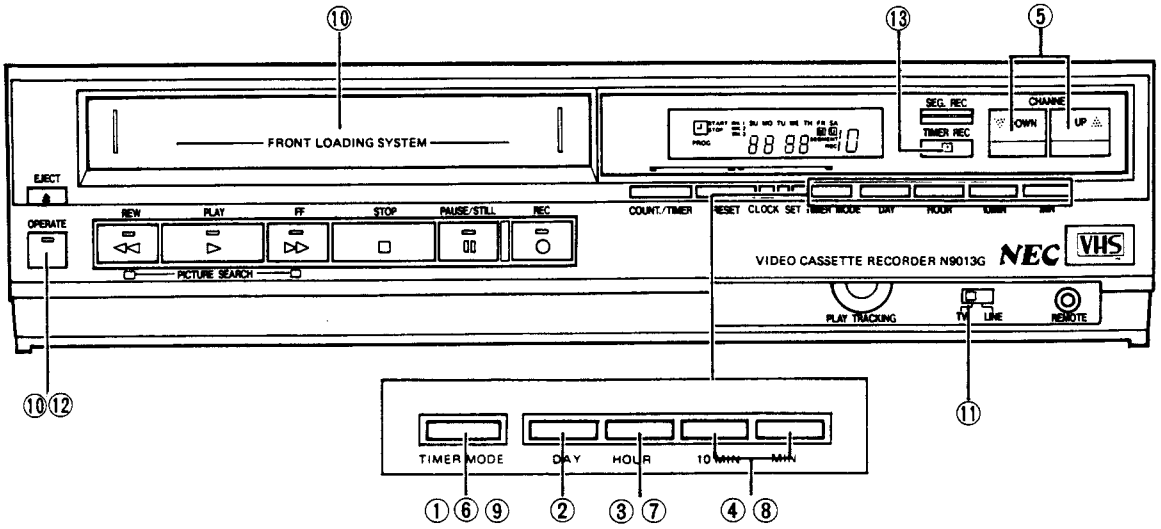
⑦ Press the FF/SEARCH button to move the tape forward rapidly.

***How to record one TV programme while watching another.**
After starts recording of one TV programme, adjust the TV's channel to another to be watched.

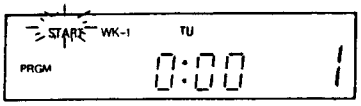
TIMER RECORDING (UNATTENDED) (N9013G)

For example:
Set time for timer recording to next week Friday PM 7:30 (19:30) – PM 8:54 (20:54) 8 channel.
Suppose today is Tuesday.

- The clock system of the VCR is the twenty-four-hour system. In the display, PM 7:30 shows 19:30 and PM 8:54 shows 20:54.

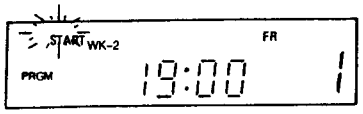


① Press the TIMER MODE button to START.
- "START" mark flashes in the display.
- As today is Tuesday, "TU" shows in the display.

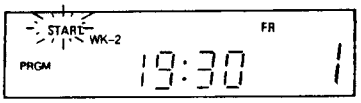


② Press the DAY button to set the next week Friday.
- "WK-1" mark means this week, "WK-2" mark means next week and "WK-3" mark means week after next.

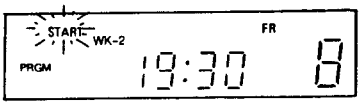
③ Press the HOUR button to set the 19.



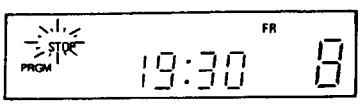
④ Press the 10 MIN button and the MIN button to set the 30.



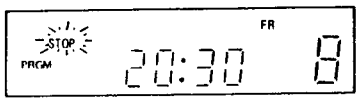
⑤ Press the Channel up/down buttons to set the 8 channel.



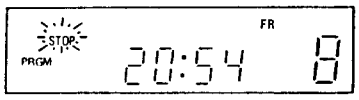
⑥ Check the recording day, the rec start time and the TV channel.
Press the TIMER MODE button to STOP.
- "STOP" mark flashes in the display.



⑦ Press the HOUR button to set the 20.



⑧ Press the 10 MIN button and the MIN button to set the 54.



⑨ Check the rec stop time. Press the TIMER MODE button to PRESENT TIME.

⑩ Press the OPERATE button to turn on and insert a video cassette.

- Be sure to check that sufficient tape remains for the timer recording and that the safety tab of the video cassette is not broken off.

⑪ Input select switch is set to TV.

⑫ Press the OPERATE button to turn off.

⑬ Press the TIMER REC button.

- ⏲ mark, and "PRGM" mark show in the display.

The VCR is ready for the timer recording.

***How to set the same programme every day**

Follow the same procedures for step ① of TIMER RECORDING.

② All days from SU to SA are displayed by pressing the DAY button.

Follow the same procedures for steps ③ to ⑬ of TIMER RECORDING.

***How to set the same programme every day except Sunday or except Sunday and Saturday.**

(WEEK DAY programme)

Follow the same procedures for step ① of TIMER RECORDING.

② All days from MO to SA are displayed by pressing the DAY button.

This is the same programme every day except Sunday.

All days from MO to FR are displayed by pressing the DAY button.

This is the same programme every day except Sunday and Saturday.

Follow the same procedures for steps ③ to ⑬ of TIMER RECORDING.

***How to check programmed contents**

1 Press the TIMER MODE button to start.
2 The programmed contents will be indicated in the display. You can check the recording day, the recording start time and the TV channel.
3 Press the TIMER MODE button to stop.
You can check the rec stop time.

***How to change programmed contents**

1 Press the TIMER MODE button to start.
2 The programmed contents will be displayed. Set the parts to be changed in the same manner as the previous programming.

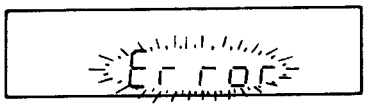
***How to cancel programmed contents**

1 Press the TIMER MODE button to start.
2 Pressing the RESET button, the programmed contents will disappear and the display change to:
weekly day . . . . WK-1, today
time 0:00
TV channel 1

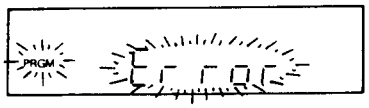
***When "Error" shows in the display**

When press the TIMER REC button at the following,"Error" shows in the display.

1 When use the video cassette without safety tab or the video cassette is removed, ...



2 When the rec stop time is the same time of the rec start time, ...



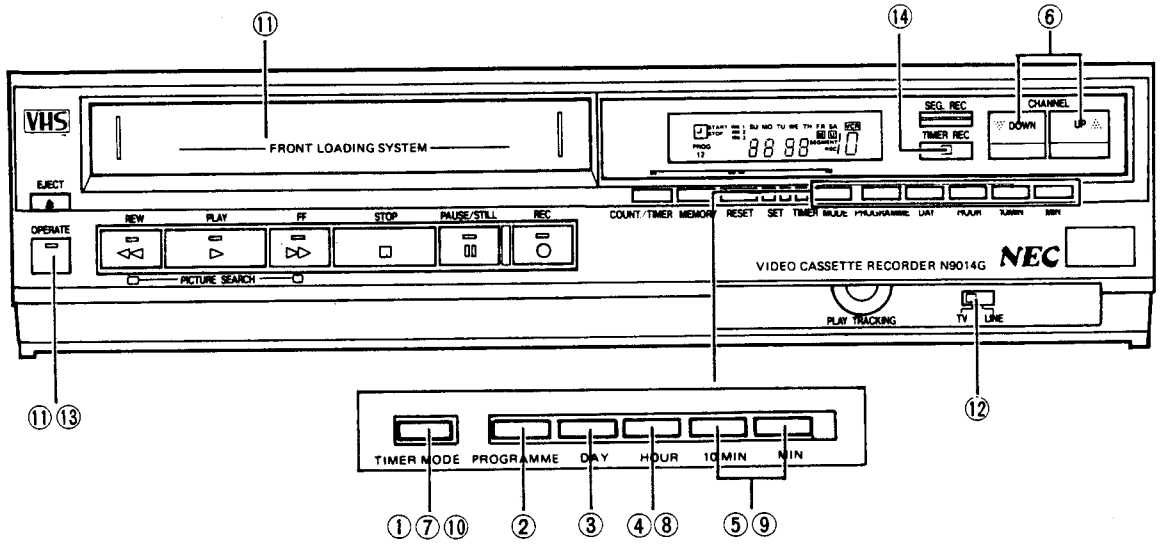
CAUTION

- When pressing the TIMER REC button during the timer recording ⏲ mark goes out and normal recording starts.
- When the VCR is ready for a timer recording, the power will not turn on even if pressing the OPERATE button to ON. (⏲ mark flashes in the display.)
If you want to turn on the VCR, and the VCR is not ready for a timer recording, pressing the TIMER REC button and press the OPERATE button to turn on.
- Even if pressing the TIMER REC button during the segment recording, the segment recording goes on and the VCR is not ready for a timer recording. (⏲ mark lights in the display.)
After the segment recording is finished, the power turns off and the VCR is ready for a timer recording.
- When pressing the SEGMENT REC button during the timer recording, the timer recording goes out and the segment recording starts.

TIMER RECORDING (UNATTENDED) (N9014G)

For example:
Set time for timer recording to next week Friday PM 7:30 – PM 8:54 8 channel at program No. 2.
Suppose today is Tuesday.

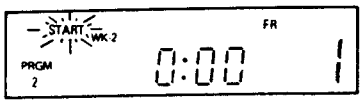
- The clock system of the VCR is the twenty-four-hour system. In the display, PM 7:30 shows 19:30 and PM 8:54 shows 20:54.



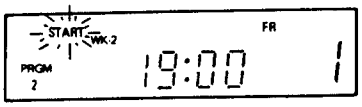
① Press the TIMER MODE button to START.
- "START" mark flashes in the display.

② Press the PROGRAMME button to select programme No.
- As today is Tuesday, "TU" shows in the display.

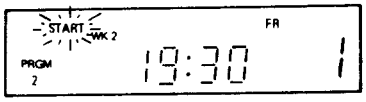
③ Press the DAY button to set the next week Friday.
- "WK-1" mark means this week, "WK-2" mark means next week and "WK-3" mark means week after next.



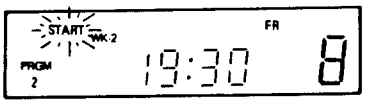
④ Press the HOUR button to set the 19.



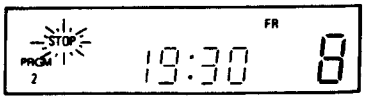
⑤ Press the 10 MIN button and the MIN button to set the 30.



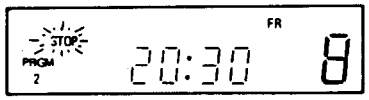
⑥ Press the Channel up/down buttons to set the 8 channel.



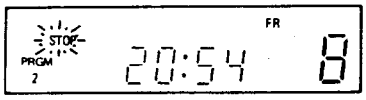
⑦ Check the recording day, the rec start time and the TV channel.
Press the TIMER MODE button to STOP.
- "STOP" mark flashes in the display.



⑧ Press the HOUR button to set the 20.



⑨ Press the 10 MIN button and the MIN button to set the 54.



⑩ Check the rec stop time. Press the TIMER MODE button to PRESENT TIME.
⑪ Press the OPERATE button to turn on and insert a video cassette.
- Be sure to check that sufficient tape remains for the timer recording and that the safety tab of the video cassette is not broken off.

⑫ Input select switch is set to TV.
⑬ Press the OPERATE button turn off.
⑭ Press the TIMER REC button.
- ⊐ mark, "PRGM" mark and programme No. to be programmed show in the display.
  The VCR is ready for the timer recording.

***How to set the same programme every day**
Follow the same procedures for steps ① and ② of TIMER RECORDING.

③ All days from SU to SA are displayed by pressing the DAY button.

Follow the same procedures for steps ④ to ⑭ of TIMER RECORDING.

***How to set the same programme every day exept Sunday or except Sunday and Saturday.**
(WEEK DAY programme)
Follow the same procedures for steps ① and ② of TIMER RECORDING.
③ All days from MO to SA are displayed by pressing the DAY button.

This is the same programme every day except Sunday.
All days from MO to FR are displayed by pressing the DAY button.

This is the same programme every day except Sunday and Saturday.
Follow the same procedures for steps ④ to ⑭ of TIMER RECORDING.

***How to set the same programme at the same time every week.**
Follow the same procedures for step ① of TIMER RECODING.
② Press the PROGRAMME button to set the 4 EW.

Follow the same procedures for steps ③ to ⑭ of TIMER RECORDING.

***How to check programmed contents**

1 Press the TIMER MODE button to start.
2 Recall the programme No. to be checked by pressing the PROGRAMME button.
The contents of recalled programme will be indicated in the display. You can check the recording day, the rec start time and the TV channel.
3 Press the TIMER MODE button to stop.
You can check the rec stop time.

***How to change programmed contents**

1 Press the TIMER MODE button to start.
2 Recall the programme No. to be changed by pressing the PROGRAMME button.
3 The programmed contents will be displayed. Set the parts to be changed in the same manner as the previous programming.

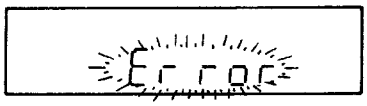
***How to cancel programmed contents**

1 Press the TIMER MODE button to start.
2 Recall the programme No. to be canceled by pressing the PROGRAMME button.
3 Pressing the RESET button, the programmed contents will disappear and the display will change to:
weekly day . . . . WK-1, today
time 0:00
TV channel 1

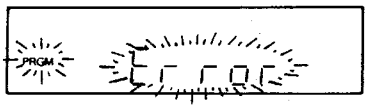
***When "Error" shows in the display**

When press the TIMER REC button at the following,"Error" shows in the display.

1 When use the video cassette without safety tab or the video cassette is removed, ...



2 When the rec stop time is the same time of the rec start time, ...



This "Error" is not shown in the display, if all programmes are not satisfied with this conditions.

CAUTION

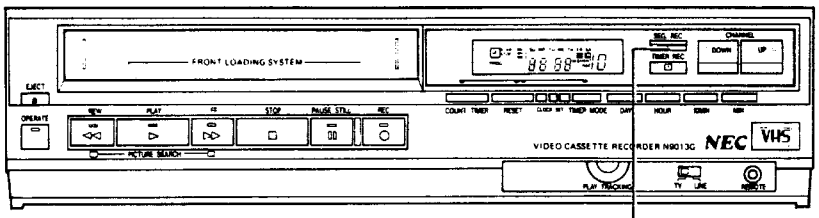
- When pressing the TIMER REC button during the timer recording ◰ mark goes out and normal recording starts.
- When the VCR is ready for a timer recording, the power will not turn on even if pressing the OPERATE button to ON. (◰ mark flashes in the display.)
If you want to turn on the VCR, and the VCR is not ready for a timer recording, pressing the TIMER REC button and press the OPERATE button to turn on.
- Even if pressing the TIMER REC button during the segment recording, the segment recording goes on and the VCR is not ready for a timer recording. (◰ mark lights in the display.)
After the segment recording is finished, the power turns off and the VCR is ready for a timer recording.
- When pressing the SEGMENT REC button during the timer recording, the timer recording goes out and the segment recording starts.

SEGMENT RECORDING (N9013G/N9014G)

This function is very convenient in instances when, for example, an unexpected guest drops in, or you need to go out all of a sudden, etc. It lets you select timer recording easily, without the need for using the timer recording procedures.

Preparation

- Press the OPERATE button to turn on.
- Insert a video cassette with safety tab.
- Turn TV on and adjust the channel to the video channel.
- Input select switch is set to TV.
- Choose the programme to be recorded pressing the channel up/down buttons.



SEGMENT REC button

1 Press the SEGMENT REC button.

- "SEGMENT REC" mark lights in the display, "End" also shows in the display and recording starts.

2 Press the SEGMENT REC button again, and the display 0:30 appears.
Each time the SEGMENT REC button is depressed, the time will be added in 30 minute in SEGMENTS. For example 0:30, 1:00, etc. This can be set to a maximum of 5:00 hrs.

Segment recording length are as follows

SEGMENT REC button	Timer indication (recording length)
1st press	End
2nd press	0:30
3rd press	1:00
4th press	1:30
5th press	2:00
6th press	2:30
7th press	3:00
8th press	3:30
9th press	4:00
10th press	4:30
11th press	5:00
12th press	normal rec mode

Time indication during segment recording
The remaining recording time is displayed.
Ex. 30 minutes recording
0:30 → 0:29 → 0:28 . . . . . 0:02 → 0:01 → 0:00
(Power supply shuts off automatically.)

***How to change recording length during segment recording**

1 Press the REC button. The indication of "SEGMENT REC" goes out, and normal recording starts.
2 Press the SEGMENT REC button, and recording length is reset.

***How to stop segment recording**

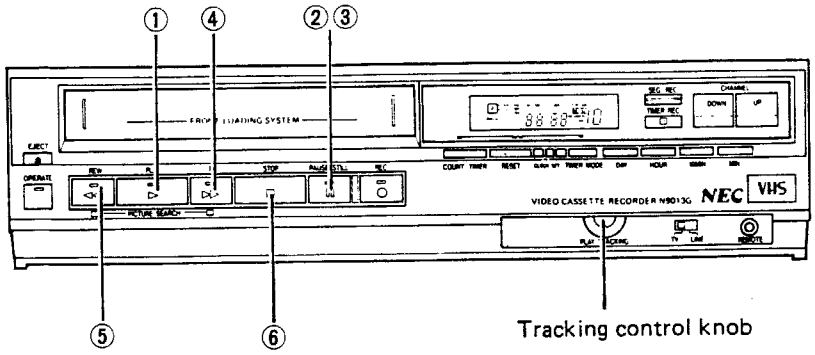
- Press the OPERATE button. Recording will stop and power will turn off.
- Press the REC button. Normal recording will start.

***When "Error" shows in the display**

- When pressing the SEGMENT REC button using the video cassette without the safety tab, "Error" shows in the display and the video cassette is ejected automatically.
If this happens, check the video cassette.

PLAYBACK (N9013G/N9014G)

Preparation
- Press the OPERATE button to turn on.
- Insert a recorded video cassette.
- Turn TV on and adjust the channel to the video channel.



① **Normal playback**
Press the PLAY button.
- The play lamp lights.
- Adjust the Tracking control knob on the VCR if the image is partially obscured by noise bars.

② **Still playback**
When the VCR is in the playback mode, press the PAUSE/STILL button to view a still picture.
(The pause/still lamp lights.)
To continue the normal playback, press the PLAY button.

③ **Still adjust**
When the VCR is in the still mode, you can adjust the noise bar position by pressing the PAUSE/STILL button.

④ **Cue playback**
When the VCR is in the playback mode, press the FF/SEARCH button to view a picture in forward direction at about 7 times normal speed.

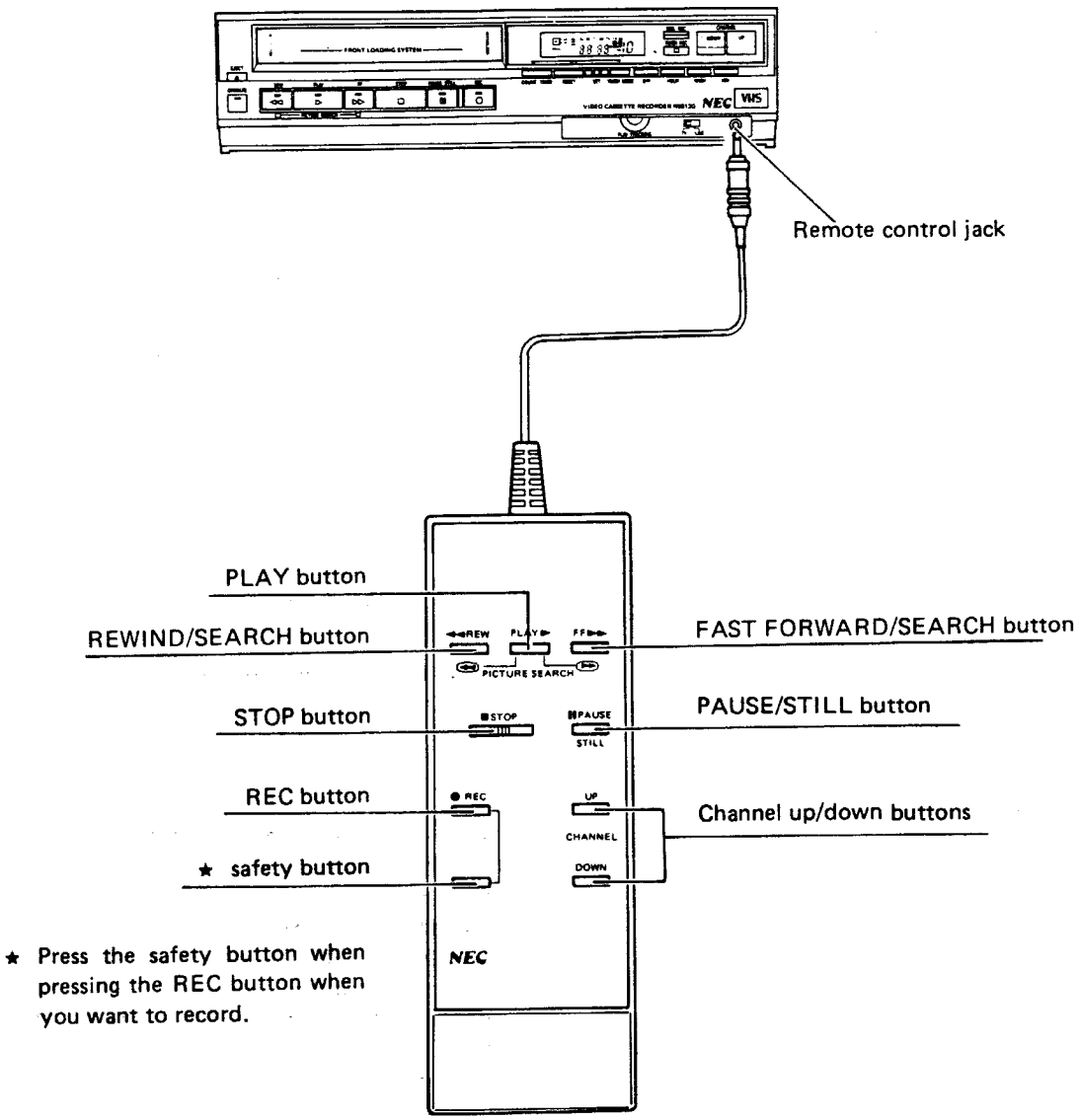
⑤ **Review playback**
When the VCR is in the playback mode, press the REW/SEARCH button to view a picture in reverse direction at about 7 time normal speed.

⑥ **After completing playback.**
Press the STOP button to stop the playback.

NOTE:
- Noise which takes the form of horizontal bars appears on the TV in the cue, review or still playback mode. This is not an indication of trouble.
- Also, the top of the picture may become distorted in the cue or review mode. This is not an indication of trouble.
- When the picture rolls vertically in the cue or review mode, adjust the vertical hold control on the TV set.
- If you leave the VCR in still playback mode for more than 5 minutes, the unit will be in normal playback mode automatically to protect the tape and the video heads.

REMOTE CONTROL (N9013G)

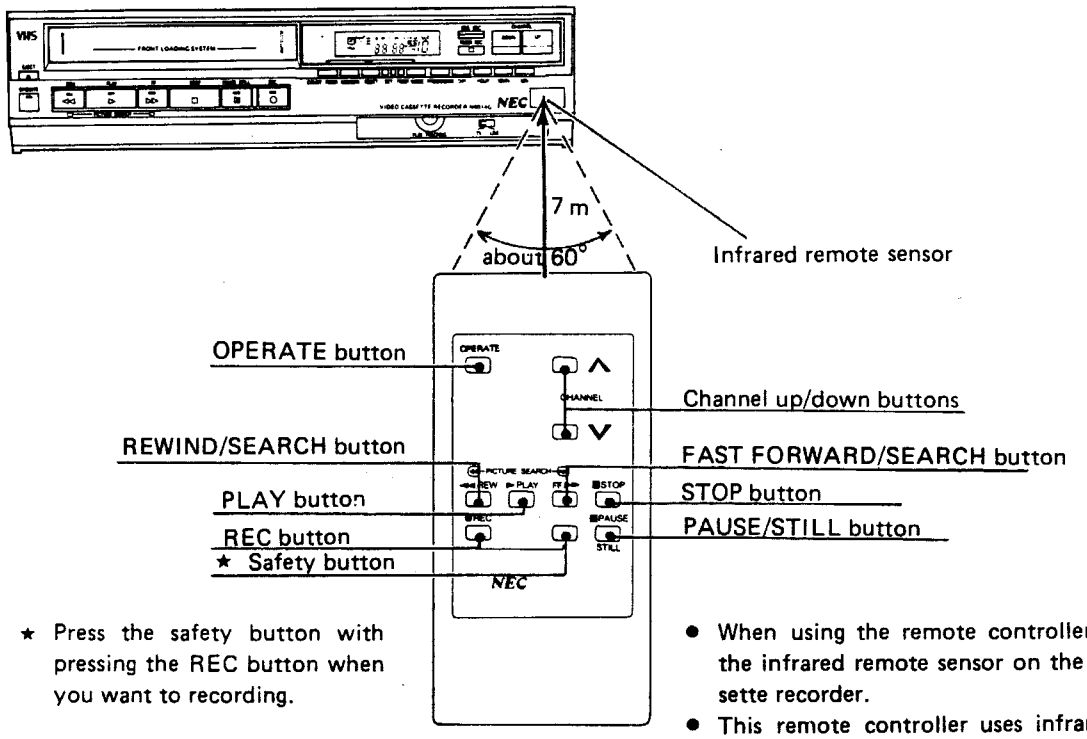
By using the remote control unit (RB-90EP), you can select FF, PLAY, REW, STOP, REC, PAUSE/STILL, CUE, REVIEW and CHANNEL up/down commands at a remote distance from the VCR. The function of the controls on the remote control unit is identical to the VCR.



REMOTE CONTROLLER (N9014G)

By using the remote control unit (RB-91EP), you can select FF, PLAY, REW, STOP, REC, PAUSE/STILL, CUE, REVIEW CHANNEL up/down, and OPERATE control commands at a remote distance from the VCR. The function of the controls on the remote control unit is identical to the VCR.

NOTE:
Don't press two buttons at the same time (except safety and REC button); it won't hurt anything but you may not get what you wanted.

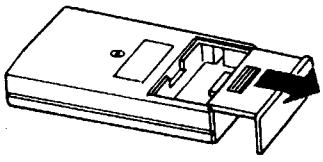


★ Press the safety button with pressing the REC button when you want to recording.

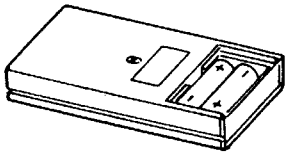
- When using the remote controller, aim its tip at the infrared remote sensor on the main video cassette recorder.
- This remote controller uses infrared rays. Extraneous fluorescent light, etc. on the infrared remote sensor the video cassette recorder can cause operational errors. Therefore, as much as possible, the video cassette recorder should be placed where it will not be subject to direct light.

INSTALLING THE BATTERIES

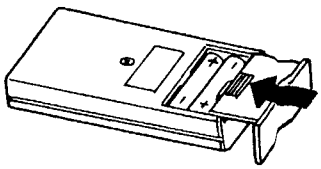
1 Slide the battery compartment cover on the back of the remote unit in the direction arrow.



2 Insert "UM-3" size batteries in the correct direction into the battery compartment.



3 Replace the cover.

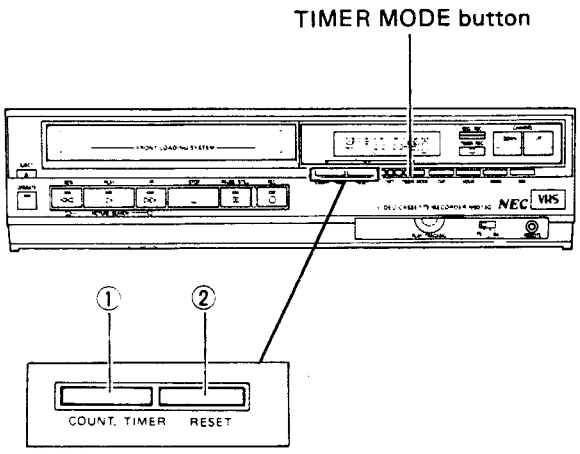


Caution Concerning the Batteries

- Use only UM-3 size batteries.
- Although this will depend on how frequency and to what extent the remote controller has been employed, the batteries should be replaced with new batteries approximately once a year.
- Remove the batteries from the remote controller when not using the remote controller for long periods of time.
- To prevent battery rupture and acid leakage, do not intermingle new batteries and old batteries or batteries of different types. (For example, do not mix normal dry cell batteries with alkaline dry cell batteries.)
- If by some misfortune acid leakage should occur, carefully remove all traces of the acid and replace the batteries with new ones.
- Do not short circuit the batteries, disassemble them or heat them or throw them into a fire.

TAPE COUNTER (N9013G)

Organizing, categorizing and identifying your video cassette.

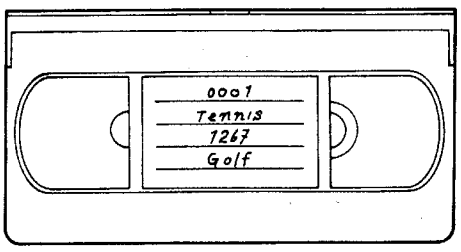


① Indication in the display shows counter or timer alternately when the COUNTER/TIMER button is pressed.
Set the display to counter mode.

- When select the TIMER MODE button to START or STOP the display cannot be set to counter mode. Press the TIMER MODE button to select PRESENT TIME.

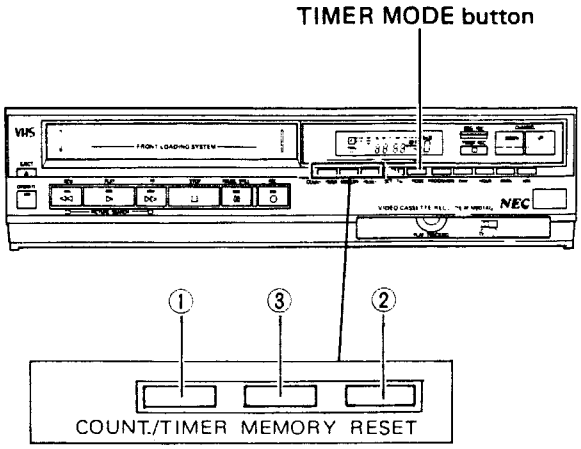
② At the beginning of the tape, press the RESET button. This will set the counter to display 0000. While recording or during playback, make a memo of recorded content and the program recorded. Thus, by later employing the fast forward or rewind modes, you can easily find the sections that you are searching for.

NOTE:
When the power of the VCR turn off, the display cannot be set to counter mode.



- Use the equipped memo sheets to label the video cassette as shown.

TAPE COUNTER (N9014G)



Organizing, categorizing and identifying your video cassette.

① Indication in the display shows counter or timer alternately when the COUNTER/TIMER button is pressed.
Set the display to counter mode.

- When select the TIMER MODE button to START or STOP the display cannot be set to counter mode. Press the TIMER MODE button to select PRESENT TIME.

② At the beginning of the tape, press the RESET button. This will set the counter to display 0000. While recording or during playback, make a memo of recorded content and the programme recorded. Thus, by later employing the fast forward or rewind modes, you can easily find the sections that you are searching for.

Pratical use the counter memory

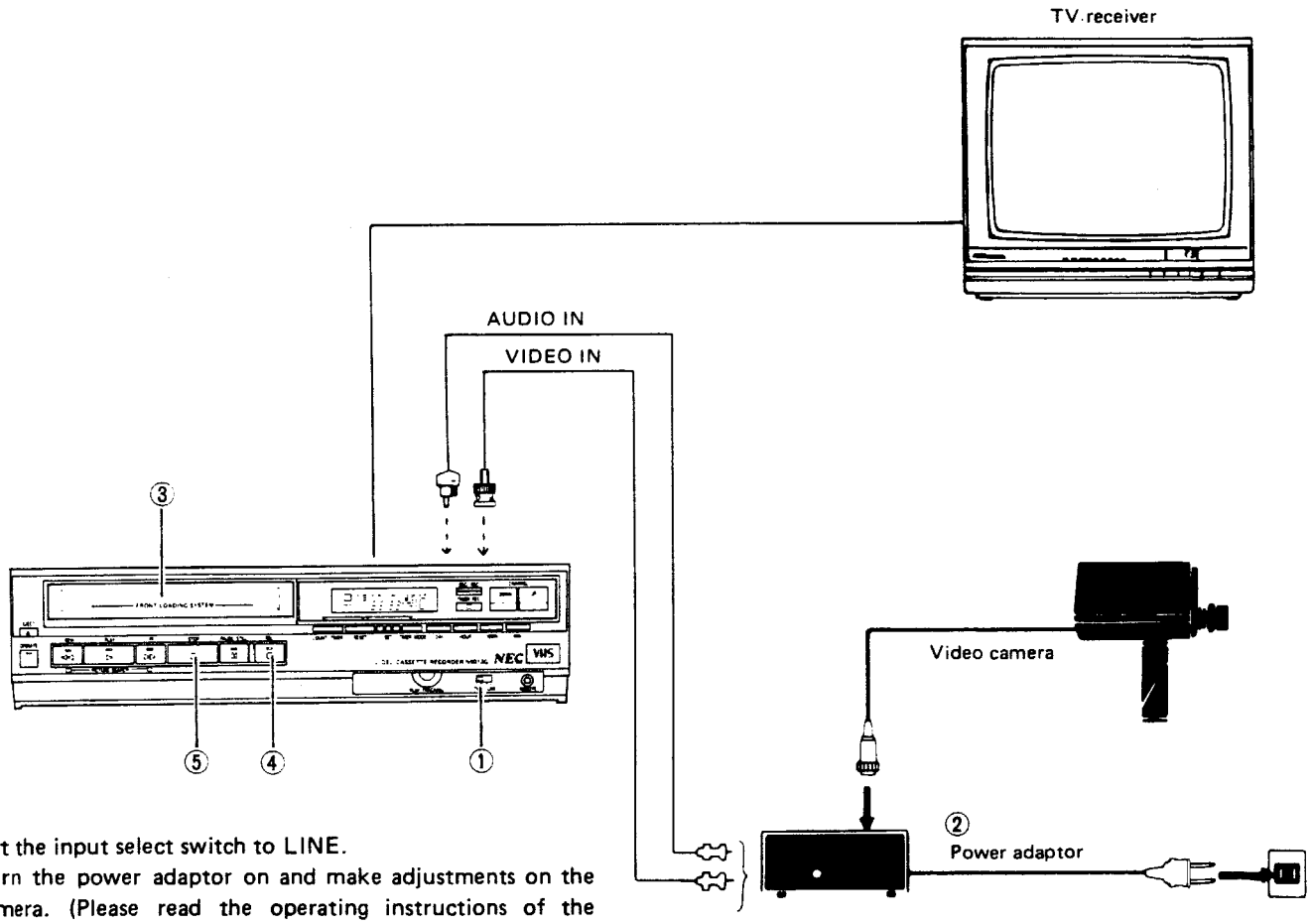
③ Press the counter memory button, the VCR is set to counter memory on mode. ([M] mark lights in the display.)
If press the REW or FF button, the tape rewind or fast forward and the tape stops automatically near at the point where the counter shows 0000.

NOTE:
When the power of the VCR turn off, the display cannot be set to counter mode.

CAMERA RECORDING (N9013G/N9014G)

Preparation

- Connect a camera according to the illustration below.
- Press the OPERATE button to turn on.
- Turn TV on and adjust the channel to the video channel.



① Set the input select switch to LINE.
② Turn the power adaptor on and make adjustments on the camera. (Please read the operating instructions of the camera.)
③ Insert a video cassette.
④ Press the REC button.
⑤ Press the STOP button to stop recording.

- When reverting back to recording the TV programme,.....
  Set the input select switch to TV.

BEFORE REQUESTING SERVICE (N9013G/N9014G)

Before requesting service, check the following points once again.

No power . . . . . .

- Make sure that the Power cord is plugged in to AC outlet.
- Check if the mains switch is set to ON.
- Make sure that the VCR is not ready for a timer recording.

The video cassette cannot be inserted . . . . . .

- Insert the video cassette with the window side up and the safety tab facing you.
- Check if the OPERATE button is on.
- Check if there is already a video cassette inserted.

TV programmes cannot be recorded . . . . . .

- Check the connection of the VCR and external antenna.
- Make sure that the receiving channel of the VCR is properly tuned.
- Make sure that the safety tab of the video cassette is not missing.
- Check if the input select switch is set to TV.

Timer recording cannot be performed . . . . . .

- Set the recording start/stop time correctly.
- If there is a power interruption, the timer will lose its preset time memory and timer recording will not be performed.

There is no playback picture . . . . .

- Tune your TV to VCR's RF output channel.

The playback picture is noisy or contains streaks . . . . . .

- Adjust by slowly turning the Tracking control.

IF A POWER FAILURE HAPPENS

- When the power resumes, indicate in the display returns 0:00 Sunday. And, the clock starts again while that indicate flashes.
- Press the CLOCK SET button to stop that the indicate flashes. Set time setting (13 page) and program of timer recording (16/19 page) over again.

WHEN TAPE MOVEMENT STOPS AUTOMATICALLY

- If trouble occurs during tape movement or to the mechanism inside the VCR, a safety device works to stop the operation of the VCR automatically. This prevents damage to the tape. If this occurs, turn off the power by pressing the OPERATE button, and after several seconds, turn on the power again to start.
- This happens if moisture is present on the cylinder head (dew). In this case, the VCR cannot be operated. Press the EJECT button to remove the video cassette, after a few hours, insert the video cassette and operate again.
- This device has an anti-dew function, which operates only when the power cord is plugged into an electrical outlet and the Mains switch is set to ON.
  It is suggested that the power be kept connected during winter and other months of heavy condensation.

NOTE:

Cleaning the VCR . . . . . .

- Wipe the VCR with a clean, dry cloth. Never use cleaning fluids, chemicals or wax.

SECTION 1
MECHANICAL ADJUSTMENT (N9013G/N9014G)

1-1. Before adjusting the mechanism

"Adjustment procedures" has been written as a guide to achieve proper operation after replacing the mechanism parts (when required by normal wear and tear or accidental damage).

Since the mechanism adjustment procedures are closely related to the adjustment of the electrical circuitry, and form the basis of the electrical circuitry adjustment procedures, carry out the mechanism procedures carefully and thoroughly, observing the proper precautions.

1-2. Servicing precautions

1. Pay special attention to how and where the unit is placed when removing the exterior casing of the unit and working with the circuit boards removed.
2. Prevent the loss of screws by putting every screw removed into a container and keeping them in one location.
3. Since the surface area of the left and right sides of the unit is small, take special precautions when working with the unit standing on its side so that it will not fall over.
4. When operating without using a cassette, insert the cassette housing until it comes to stop as shown in Fig. 1-a, then depress the cassette IN switch (Fig. 1-b). When the cassette house lamp lights, the unit can be operate even with the cassette IN switch released.

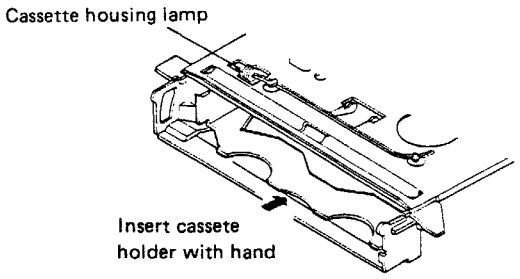


Fig. 1-a.

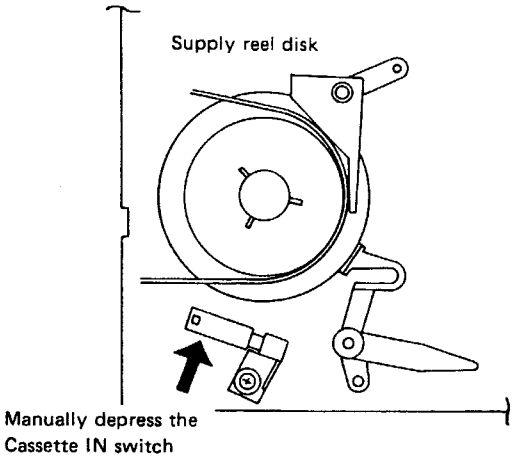


Fig. 1-b. Procedure for depressing the Cassette IN switch

1-3. Table of tools and equipment required for servicing procedures

J-1 Checking mirror Tape flow check and adjustment procedures 16950871	J-2 Hexagonal driver For guide roller screw 16951281	J-3 Adjustment driver For guide roller 16951291	J-4 Adjustment driver For tapered pin of ACE head 16951301
J-5 Box driver For ACE head, guide pole and reverse pin 16951311	J-6 Alignment tape Overall adjusting of picture quality and tracking MH-2 79V20196	J-7 * Cleaning liquid (isopropyl alcohol) cleaning cloth for cleaning 16950001	J-8 *Head demagnetizer Demagnetizing audio heads
J-9 * Cleaning cassette tape Cleaning video heads	J-10 Torque gauge (150 g/cm) FWD mode 79V20202 J-11 (600 g/cm) Brake torque 79V20200 (Torque meter head)	J-12 Height Gauge A Jig 16951371	J-13 Master Plane B Jig 16951381
J-14 Master Plane A Jig 16951361	J-15 Height Gauge B Jig 16951391	J-16 * Cassette tape (E-120) for checking tape path	

Note: The identified by * mark items in the list are not stocked in warehouse. **Fig. 2**

1-4 Disassembly

External covers and
Circuit board assemblies

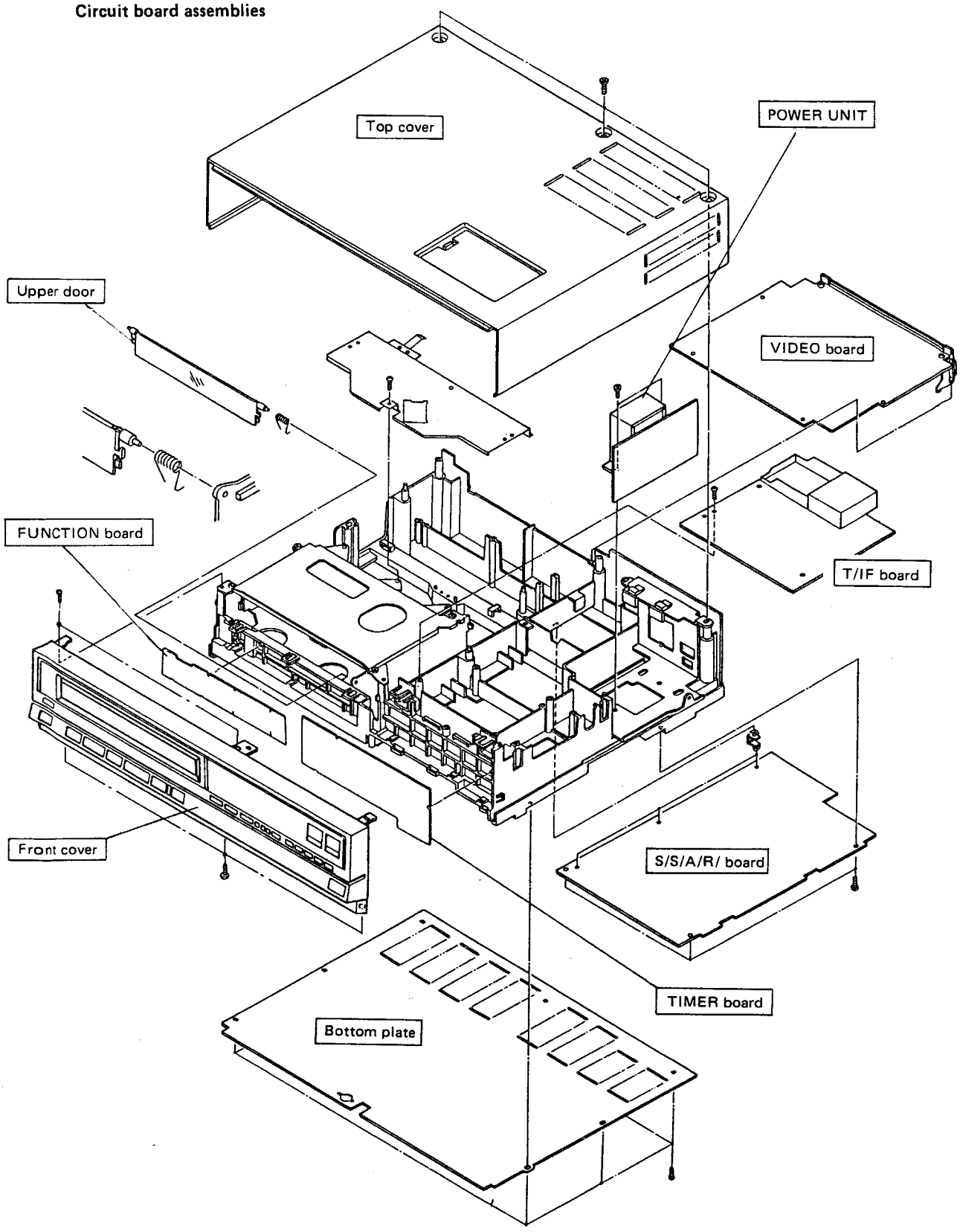


Fig. 3 External covers and Circuit board

- Top cover

1. Remove three screws and move the top cover in the arrow direction to remove it.

- Bottom plate

1. Remove eight screws and move the bottom plate in the arrow direction to remove it.

- Front cover

1. Remove the top cover and bottom plate.
2. Remove screws and pull the two prongs upward to disengage from chassis.
3. Move the front cover in the arrow direction to remove it.

- Upper door

1. Remove the front cover.
2. Move the lower door in the arrow direction to remove it. Use care regarding the torsion spring.
3. In the same manner, move the upper door in the arrow direction to remove it. Use care regarding the torsion spring.

- VIDEO board

1. Remove two screws and disengage the VIDEO board from connector panel hinges mounted on chassis to remove it.

- POWER unit

1. Remove two screws from power trans.
2. Pull the POWER unit upwards from guides of chassis to remove it.

- TIMER/FUNCTION board

1. Bend three prongs of chassis upwards to remove the TIMER/FUNCTION board.

- S/S/A/R board

1. Remove the Bottom plate.
2. Remove screws and pull the four prongs upwards to disengage from chassis.

- T/IF board

1. Remove screws and pull the two prongs upwards to disengage from chassis.

1-5. Layout of main mechanical parts

A: Top view and parts identification

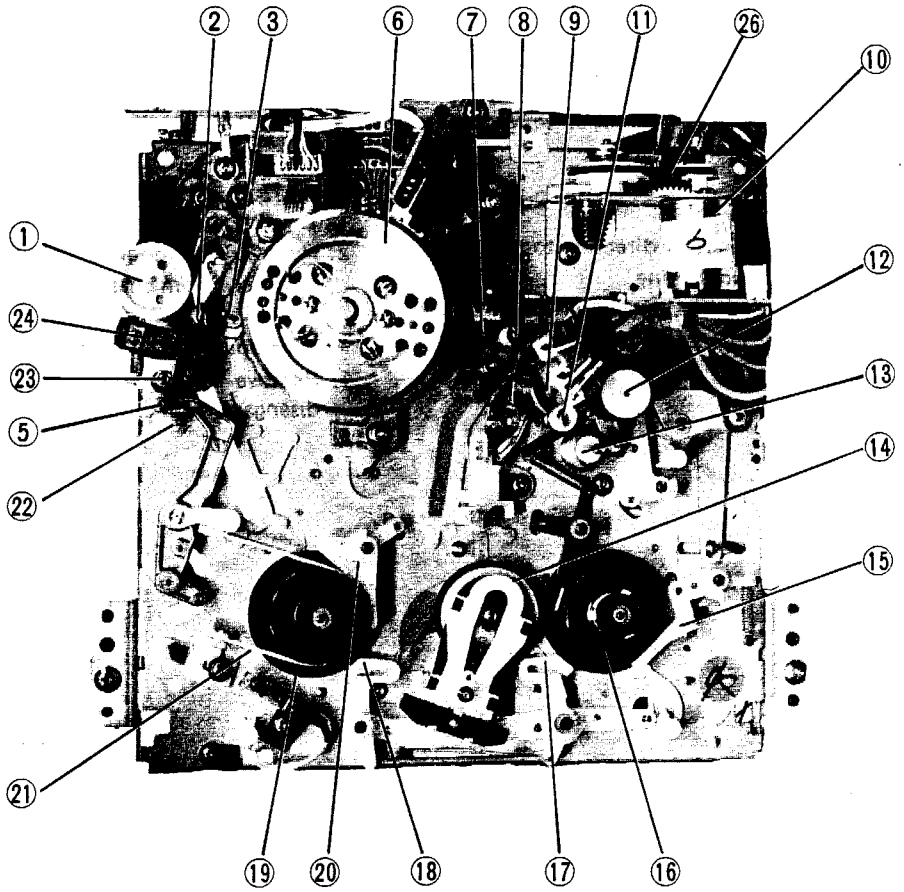


Fig. 4

B: Bottom view and parts identification

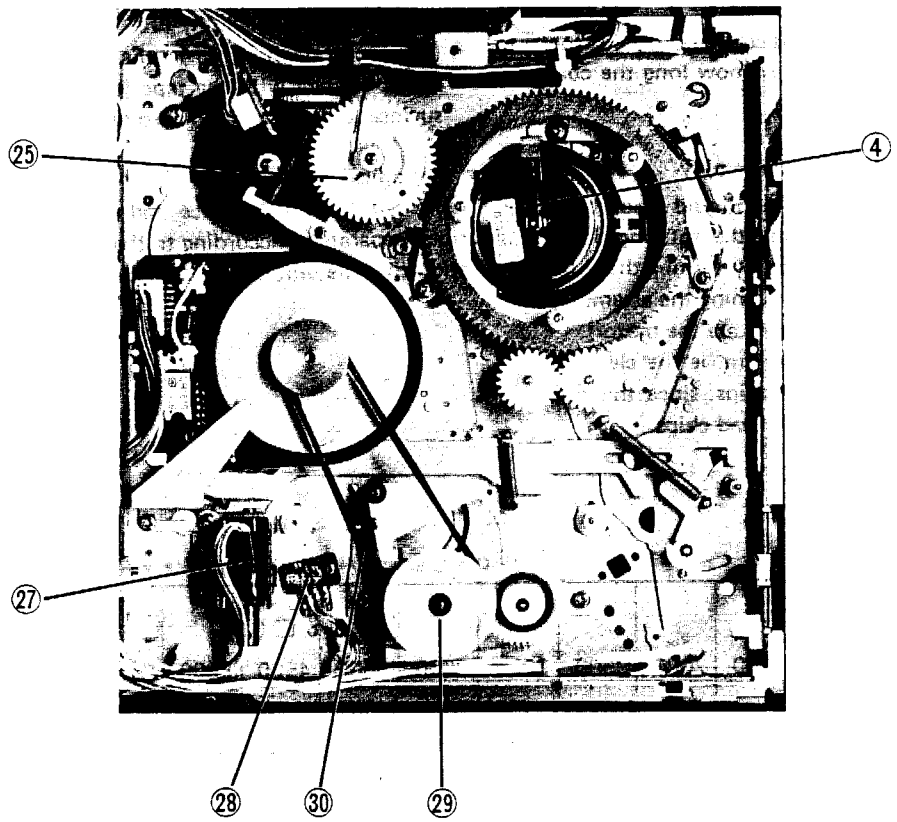


Fig. 5

1 Impedance roller
2 Supply guide roller
3 Slant pole (Supply pole base ass'y)
4 Brush
5 Tension pole
6 Upper drum
7 Slant pole (Take-up pole base ass'y)
8 Take-up guide roller
9 Audio/control head
10 Loading motor
11 Take-up guide pole
12 Pinch roller
13 Capstan (Flywheel ass'y)
14 Reel idler
15 Take-up tension brake
16 Take-up reel disk
17 Take-up brake
18 Supply brake
19 Supply reel disk
20 Supply tension brake
21 Tension band
22 Guide pin
23 Supply guide pole
24 Full erase head
25 Drive gear
26 Loading belt
27 Solenoid
28 REEL SENSOR board
29 Reel drive pulley
30 Reel belt

1-6. Regular maintenance and checking items

It is recommended to carry out the following regular checking and protection measures, since these will extend the life of the unit and the tape, as well as assuring that the optimum performance and functions of the unit will always be achieved.

- **Maintenance measures after repair of unit.**
  After the unit has been repaired, be sure to carry out the following maintenance, regardless of how long the customer has been using the unit.

- **Cleaning the rotating head and disc assembly**

1. Soak a cleaning cloth in cleaning liquid (isopropyl alcohol), and gently press it against the rotating drum assembly. Clean the assembly by slowly turning the rotating head and disc by hand (when cleaning the assembly, be sure not to turn on the power to rotate the motor).
2. When cleaning the assembly, do not move the cleaning cloth perpendicularly to the head chips, since this can lead to damage or distruction of the head chips.

- **Cleaning the tape transport system**

1. Using a cleaning cloth soaked in cleaning liquid (isopropyl alcohol), clean the drive system arts (surface of reel support etc.).

- **Cleaning the drive system**

1. Using a cleaning cloth, etc., soaked in cleaning liquid (isopropyl alcohol), clean the surfaces that come in to direct contact with the tape (tape guide, drum assembly surface, capstan and pinch roller, etc.).

- **Periodical checkpoints**

Carry out the maintenance and checking procedures described separately, according to the number of hours of operation that the unit has experienced.

List of replacement parts

○ = Cleaning/♦ = Lubrication/★ = Replacement/☆ = Checking

Maintenance and checking items \ Elapsed operation time (H)		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	Notes
Tape transport system	Cleaning of tape transport surface	○	○	○	○	○	○	○	○	○	○	Besides the items noted at left, be sure to carry out cleaning during repaire operations.
	Cleaning and demagnetization of ACE head assembly	○	○	○	○	○	○	○	○	○	○	
	Cleaning, demagnetization and replacement of rotating drum assembly	○	○	○	★	○	○	○	★	○	○	The life expectancy of the tape heads will change significantly according to how and where the unit is operated.
	Replacement of full erase head	—	—	—	—	—	—	—	—	—	★	The life expectancy of the tape heads will change significantly according to how and where the unit is operated.

○ = Cleaning/♦ = Lubrication/★ = Replacement/☆ = Checking

	Elapsed operation time (H) / Maintenance and checking items	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	Notes
Drive system	Lubrication and replacement of capstan motor	—	♦	—	♦	—	♦	—	♦	—	♦	Besides the items noted at left, be sure to carry out cleaning during repair operations.
	Replacement of R drive assembly	—	—	—	★	—	—	—	★	—	—	Besides the items noted at left, be sure to carry out cleaning during repair operations.
	Cleaning and replacement of entire mode cam assembly	—	—	—	★	—	—	—	★	—	—	Besides the items noted at left, be sure to carry out cleaning during repair operations.
	Cleaning of ferrite core and holes of solenoid	—	—	—	○	—	—	—	○	—	—	Use a dry cleaning cloth to wipe off the ferrite cores and the bttoms of the holes
	Checking and replacement of drive bolts	○	○	★	○	○	★	○	○	★	○	Besides the items noted at left, be sure to carry out cleaning during repair operations.
	Checking and replacement of loading bolts	○	○	○	○	○	★	○	○	○	○	Besides the items noted at left, be sure to carry out cleaning during repair operations.
	Cleaning and replacement of brake arms (L) (R)	○	○	○	★	○	○	○	★	○	○	Besides the items noted at left, be sure to carry out cleaning during repair operations.
	Soft brake TU Capstan brake	○	○	○	○	★	○	○	○	○	★	
Checking of performance	Unusual points	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Adjust or replace the parts causing the unusual noises.
	Checking of brake system	—	☆	—	☆	—	☆	—	☆	—	☆	
	Checking of recording and playback functions.	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Besides the items noted at left, be sure to carry out cleaning during repair operations.

Note for overhauling:
When overhauling this unit, replace all parts required, following the guidelines listed in the above table.

1-7. Layout of mechanical parts

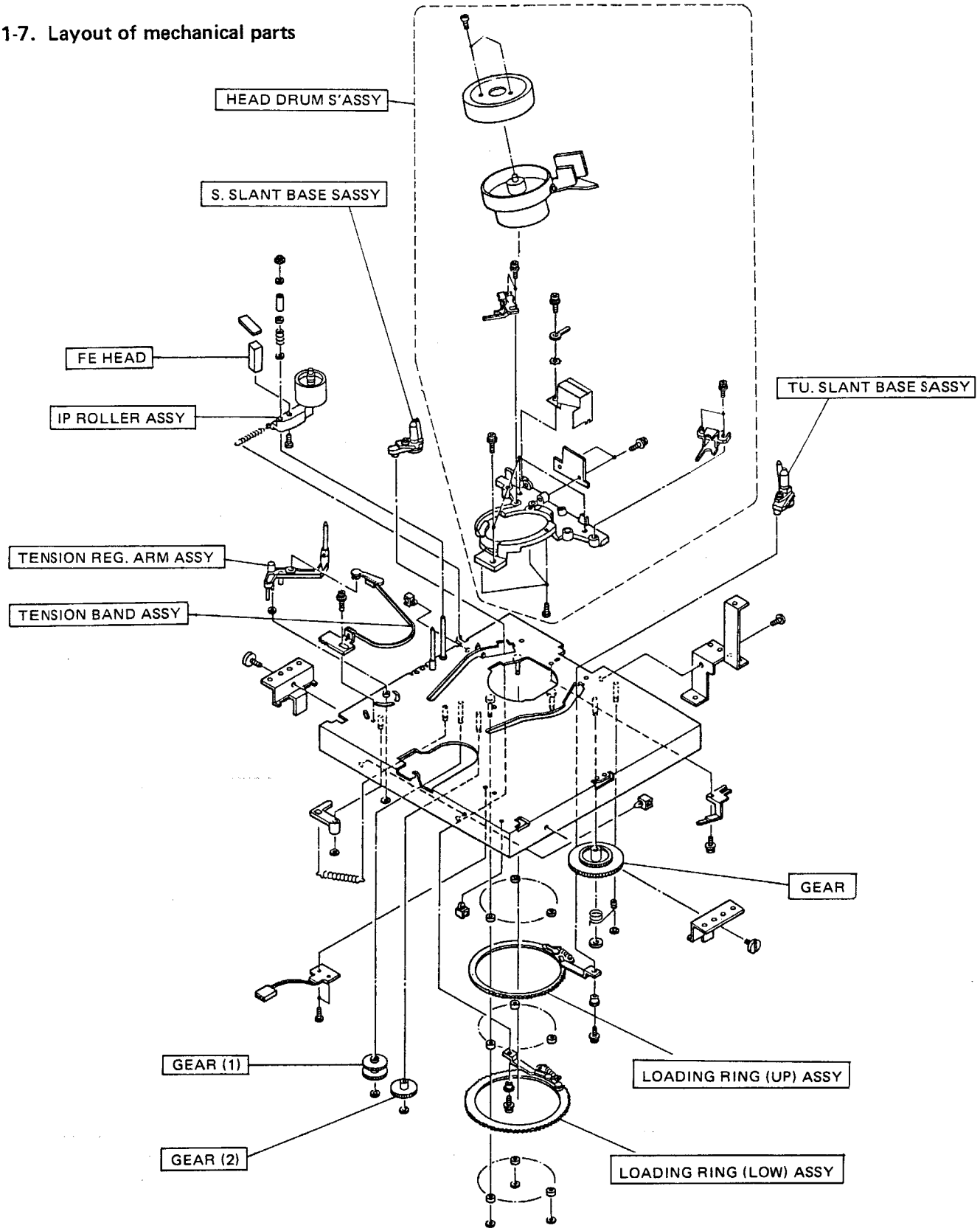


Fig. 6 Main assembly replacements

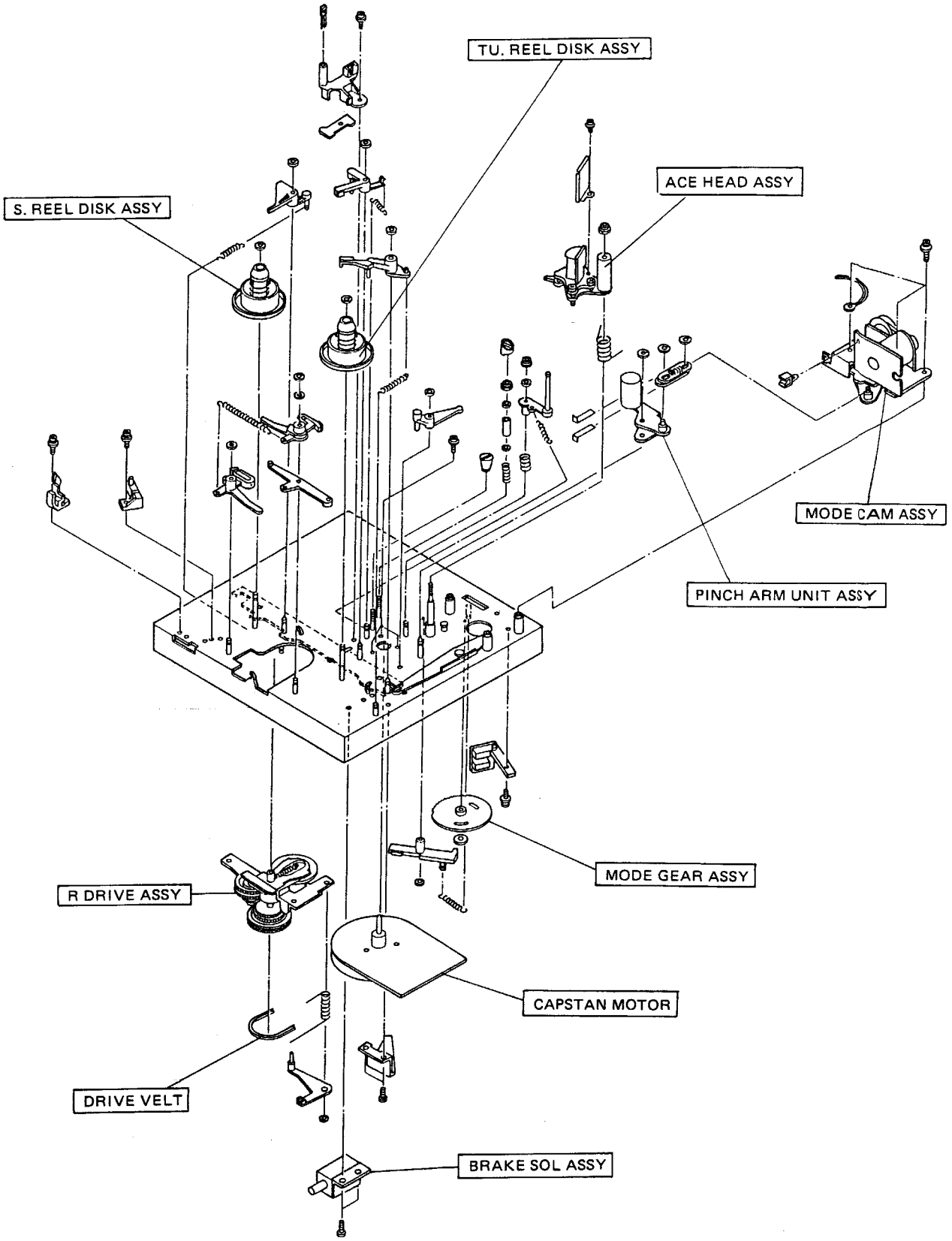


Fig. 7 Main assembly replacements

1-8. Removing the cassette housing assembly

1. Press the EJECT button.
2. Removing the two ② screws, pull the rear of the cassette housing upwards. Carefully pull it down 4 — 5 mm towards the rear, and then disengage the forward cassette housing tabs from the main chassis.
   After the forward cassette housing tabs have been disengaged, carefully pull the cassette housing upwards and remove it.
3. Remove the connector Ⓐ.

Note:
Unit can be operated with the cassette housing ass'y removed from the main unit. Depress the cassette IN switch and connect the AC cord (Fig. 1-1'). Then press the power button to ON. (If the AC cord is connected and the power is pushed ON without pressing the cassette IN switch, then the unit is set in alarm mode and cannot be operated.)

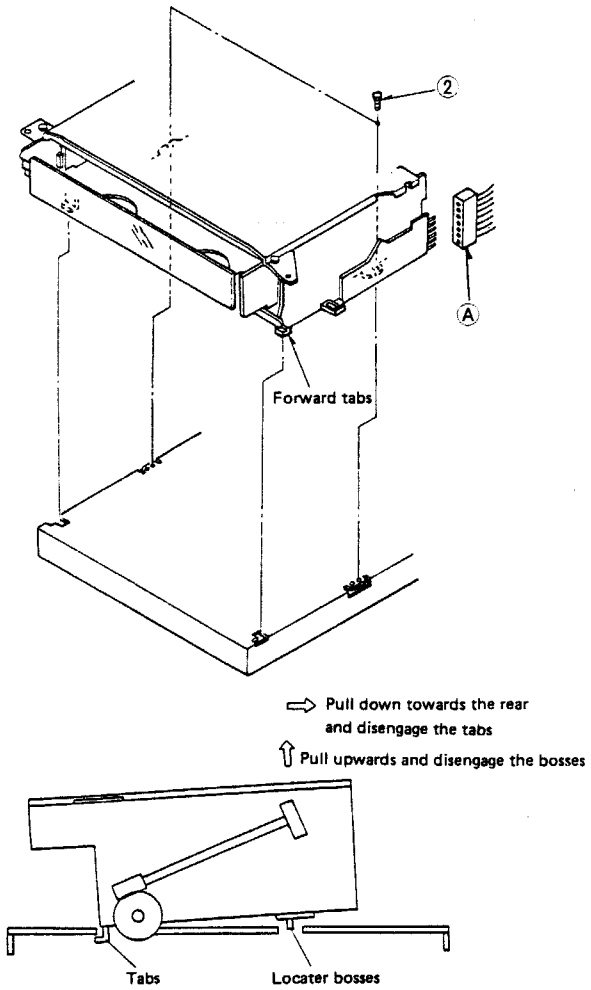


Fig. 8

1-9. Replacement of upper rotating drum assembly

1. Remove the solder from the four lead wires connecting the video heads to the terminal transformer. (Carry out quickly so as not to damage the insulation of the lead wires.)
2. Remove the two ① screws, then lift the rotating drum assembly upward and remove it.
3. Use alcohol (isopropyl alcohol) to clean the flange surface of the lower drum and the surface on the new rotating drum assembly that will come into contact with the flange. Position the rotating drum assembly so that the wire is aligned with the markings on the terminal transformer, as depicted in Fig. 9, then carefully slide it down into palce.

Note:
1. Be sure not to touch the head chips with your hands, bump them or damage them.
2. If the rotating drum assembly should get caught on some obstruction before it has been slid completely into place, do not attempt to force it, but rather, first remove it, then try again.

4. Tighten the two ① screws alternatly, then solder the four lead wires to their correct positions on the terminal transformer, making sure that all connections are solid and secure.
5. After the rotating drum assembly has been replaced, be sure to carry out the following checks and adjustments.
   1) Control head phase adjustment (refer section 3-4)
   2) Playback switching point adjustment (refer to section 3-1-1).
   3) Checking and adjustment of entire video and audio systems (refer to section 4-2, 4-3, 4-5).

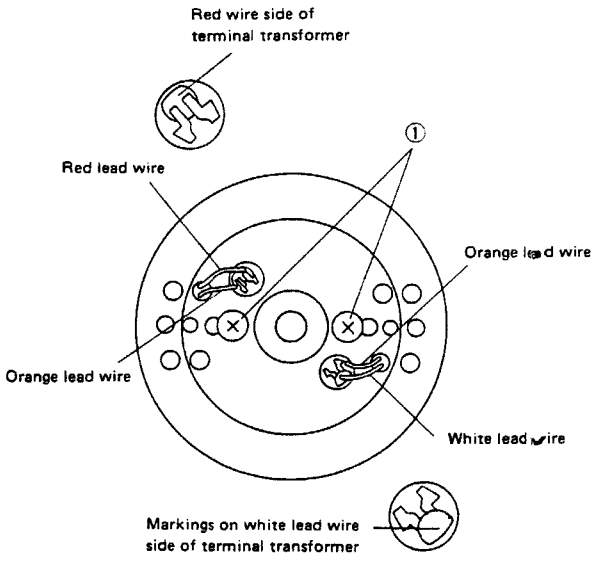

Red wire side of terminal transformer
①
Red lead wire
Orange lead wire
Orange lead wire
White lead wire
Markings on white lead wire side of terminal transformer

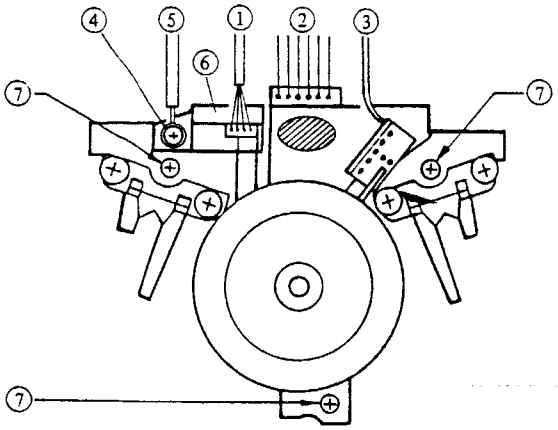
Fig. 9

1-10. Entire Drum Assembly Replacement

1. Remove the drum assembly connectors ① , ② , and ③ . (When removing connector ② , hold down the slanting line part of the print substrate.)
2. Remove screw ④ , then shield line ⑤ and shield cover ⑥ .
3. Remove the three screws ⑦ , and then remove the drum assembly.

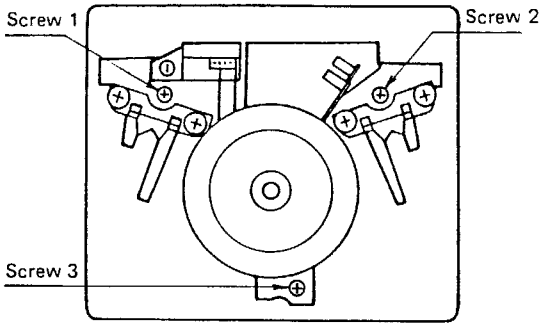
Note:
When doing this be careful not to touch the drum head tip with your finger or damage the drum assembly.

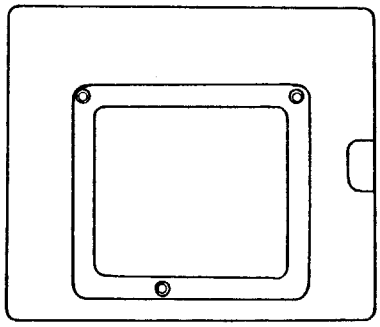
4. Follow the above instructions in reverse order to attach the drum assembly.



5. After replacing, check and adjust as follows.
   1) Adjust tape path. (Refer to section 2.)
   2) Adjust for compatibility. (Refer to section 3.)
   3) Make necessary adjustments to the servo system, video system, and audio system.
   (Refer to sections 4-2, 4-3, and 4-5.)
6. Handling of Service Drum Package
   Remove the drum from the inner box as shown in the figure below. Remove the 3 black screws from the inside of the box, remove the board, and then remove the drum assembly.

Note:
The drum assembly is adjusted precisely. Handle carefully in order that it not become dirty, scratched, damaged or deformed in any way.





1-11. Replacement of ground plate

1. After first placing the unit on its side, open the bottom of the unit and remove the ① screw, as shown in Fig. 10
2. Use the ① screw to attach the new grounding plate so that its contact area is aligned with the center of the drum assembly shaft.

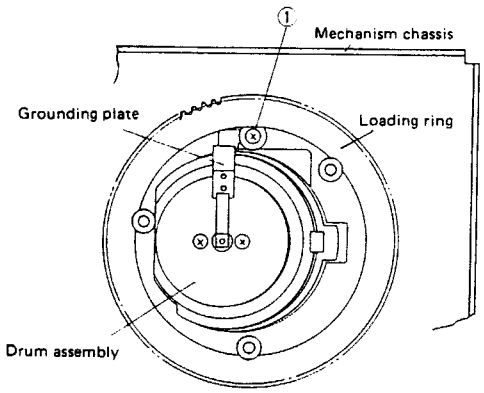


Fig. 10

1-12. Checking adjusting and replacement procedures

When replacing parts, remove the external casing, circuit boards and cassette housing as required. Replace the parts required in accordance with the following procedures, referring to the corresponding figures. (Pages 1-2, 1-4, 1-5)

1-12-1. Audio/control head (refer to Fig. 11)

1. Remove connectors Ⓐ and Ⓑ from the ACE head circuit board.
2. Use a box driver (J-5) to remove the ① nylon nut.
3. Rotate the ACE head assembly clockwise, so that it is slightly away from the taper pin, then pull free upwards from the head pivot. Be careful when carrying out this procedure, since the (TC) spring is applying pressure to the assembly.
4. Replace the ACE head assembly and mount it into position, following the above procedure in reverse. Set the (TC) spring so that it comes into contact with the outer side of the bent out Ⓐ part of the ACE SA. (Fig. 12)
5. After the ACE head assembly has been replaced, adjust the height of the new ACE head assembly.
6. To adjust the height of the ACE Head, first place the Master Plane B Jig (J-13) on the chassis reference pin. Place the Height Gauge B Jig (J-15) on J-13 with the surface marked with an "H" facing up, and use the nylon nut box driver ① to adjust to the same height as part A. Also, adjust the height of the tapered pin by following the same procedure as for the ACE Head and using adjustment driver J-4 to adjust to the same height as part B.

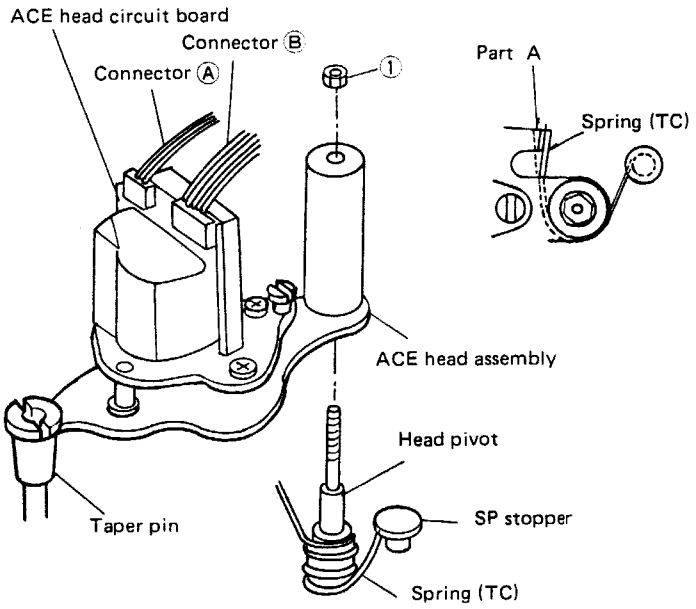


Fig. 11

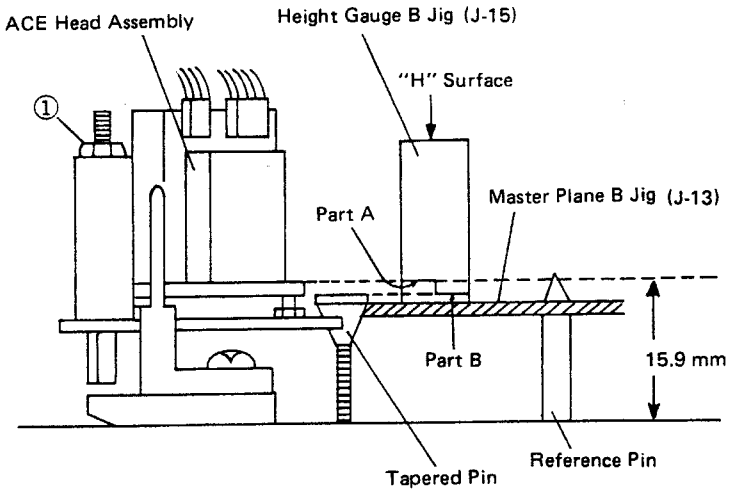


Fig. 12 Replacing the ACE head

1-12-2. Full erase head (refer to Fig. 13)

1. Remove the head circuit board from the full erase head.
2. First remove the nylon nut, connector then remove the upper flange, the collar, the lower flange, the guide pin spring, the flat washer and the arm spring.
3. Remove the impedance roller SA (SA = sub assembly) upwards.
4. Remove the screw securing the full erase head from underneath the impedance roller arm, then remove the full erase head.
5. Replace the full erase head and mount it into position, following the above procedure in reverse.

1-12-3. Impedance roller SA (refer to Fig. 13)

1. Remove the nylon nut, the upper flange, the collar, the lower flange, the guide pin spring, the flat washer and the arm spring.
2. Remove the impedance roller SA upwards.
3. Replace the impedance roller and mount it into position, following the above procedure in reverse.

Note: After above replacements adjust high by reperring to to Fig. 34, Page 2-2.

1-12-4. Intermediate gear

1. As shown in Fig. 15, remove the retaining rings ② and ④, then remove the ① intermediate gear spring.
2. Remove the intermediate gear upwards.
3. Replace the imtermediate gear and mount it into position, following the above procedure in reverse.

Note:

1. As shown in Fig. 14, with the Ⓓ loading phase holes of the upper and lower loading rings aligned with each other, attach the Ⓐ intermediate gear so that the Ⓑ phase hole of the Ⓐ intermediate gear and the Ⓒ phase hole of the loading ring are opposite to each other, as shown in Fig. 2.
2. Be sure that the ① intermediate gear spring is firmly secured to the cock of the intermediate gear.

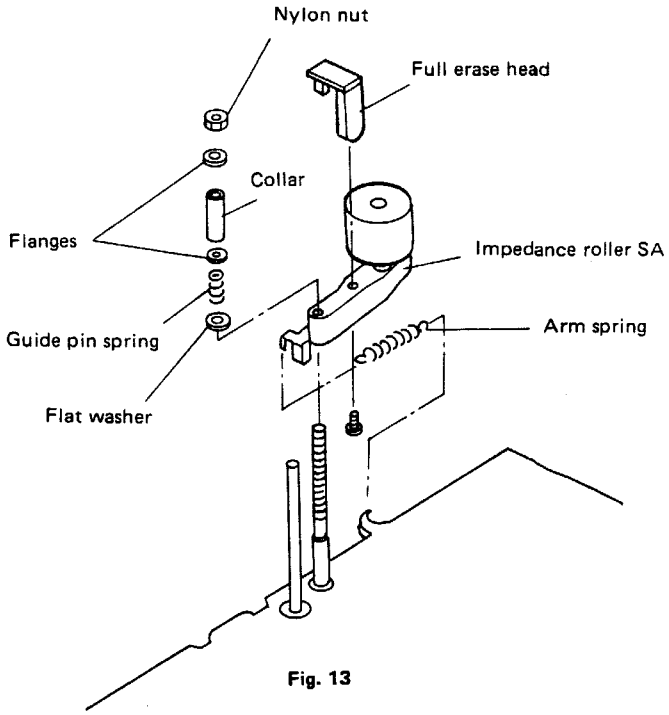


Fig. 13

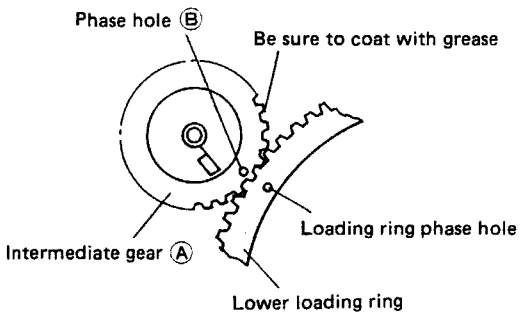


Fig. 14

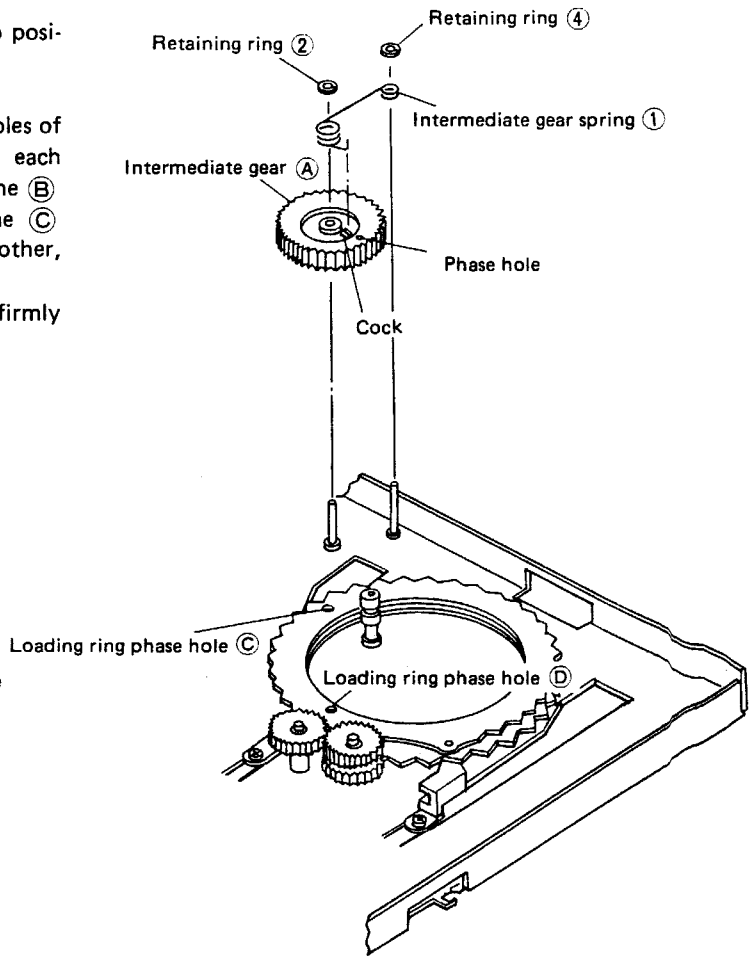


Fig. 15

1-12-5. S slant base SA and TU slant base SA

1. Remove the ① , ② and ③ connectors of the drum ass'y SA.(Press the shaded area down with your fingers when replacing connector ① so as not to damage the printed circuit board. When attaching connector ① , be sure to support underneath the circuit board with your fingers.)
2. Remove the three Ⓐ scews of the drum ass'y SA, then remove the drum ass'y SA upwards. (Be sure not to damage the head chips when carrying out this procedure).
3. Remove the Ⓑ screw, working from the reverse side of the chassis. (Fig. 17)
4. Slide and remove the S slant base SA up to ③ from the chassis.
5. Replace the S slant base SA and mount it into position, following the above procedure in reverse.

Note:

The procedure for replacing the TU slant base SA is identical to the procedure for removing the S slant base SA.

1-12-6. Entire mode cam assembly

1. Remove the loading belt of the entire mode cam assembly. Rotate the worm drive gear by hand so that the ③ part of the S link arm assembly comes as far to the right as possible, as shown in Fig. 18. (This position is the same as for the FF or the REW mode.)
2. Remove the connector Ⓐ of the motor circuit board. Next, remove the wires for the ACE head from the Ⓑ holder behind the circuit board (pattern side). (When carrying out this procedure, be sure to first remove the connector of the ACE head.)
3. Remove the ② retaining rings, then remove the pinch link plate assembly.
4. Remove the three ① screws, then remove the entire mode cam assembly upwards.
5. Replace the entire mode cam assembly and mount it into position, following the above procedure in reverse.

NOTE:

1. When attaching the mode cam SA, be sure that the motor base Ⓒhole of the entire mode cam assembly and the worm wheel Ⓓhole are aligned with the phase alignment hole of the mechanims chassis. Also be sure that the hole of the mode gear on the reverse side of the chassis is aligned with the phase alignment hole of the mechanism chassis.
2. As shown in Fig. 19, place the S link pivot into the slot on the inner side of the mode cam.
3. The triangular arm's cam boss can be inserted into the cam groove on the outer side of the worm wheel. When doing so be sure that the Ⓓhole in the worm wheel is aligned with the Ⓒ hole in the motor base.

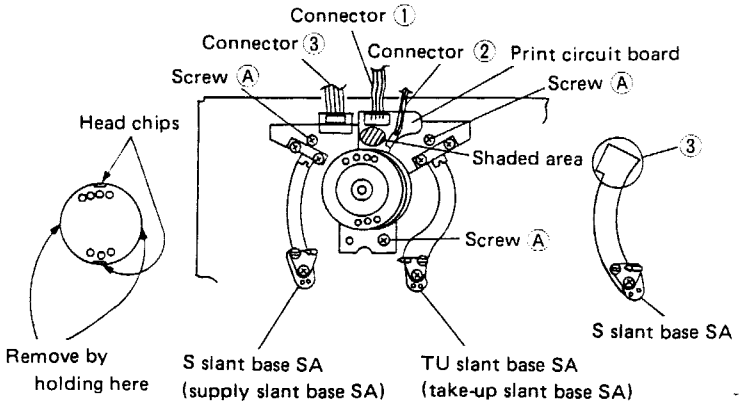


Fig. 16 Reverse side of chassis

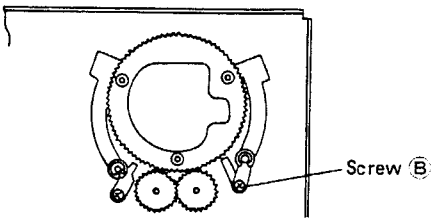


Fig. 17 Chassis upper surface

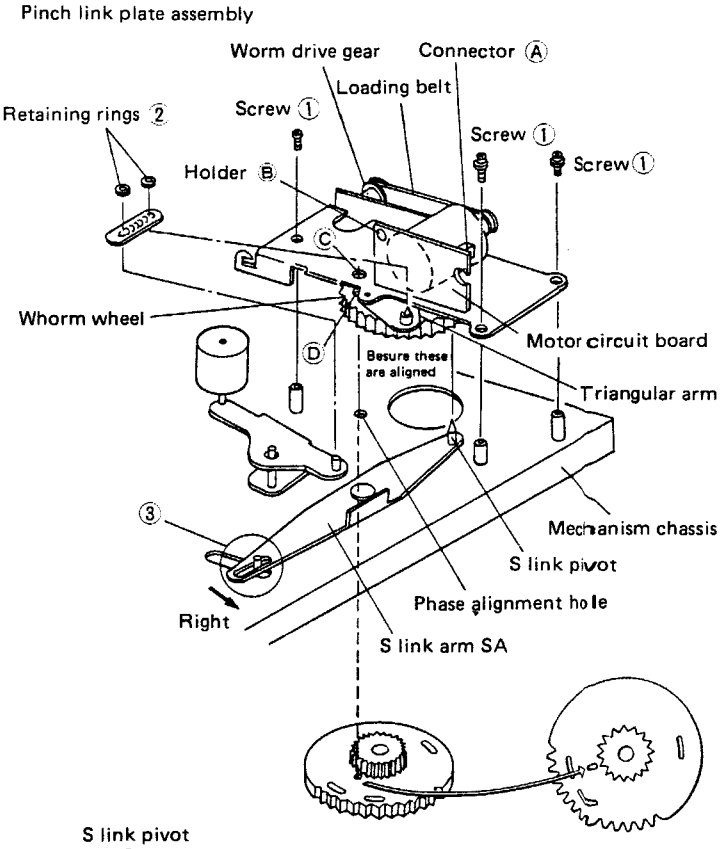


Fig. 18

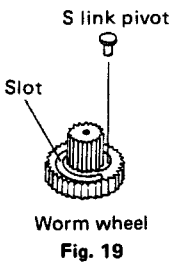


Fig. 19

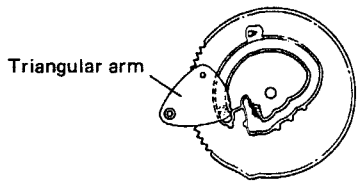


Fig. 18-1

1-12-7. Capstan motor

1. Remove the ① and ② retaining rings, then remove the pinch link plate assembly upwards.
2. Working from the reverse side of the chassis, remove the Ⓓ, Ⓔ and Ⓕ screws, then remove the supporting plate.
3. Remove the drive belt, then remove the connector from the capstan motor circuit board. Remove the Ⓐ, Ⓑ and Ⓒ screws.
4. Remove the capstan motor.
5. Replace the capstan motor and mount it into position, following the above procedure in reverse. When carrying out this operation, care should be taken not to damage or magnetize the capstan axis.

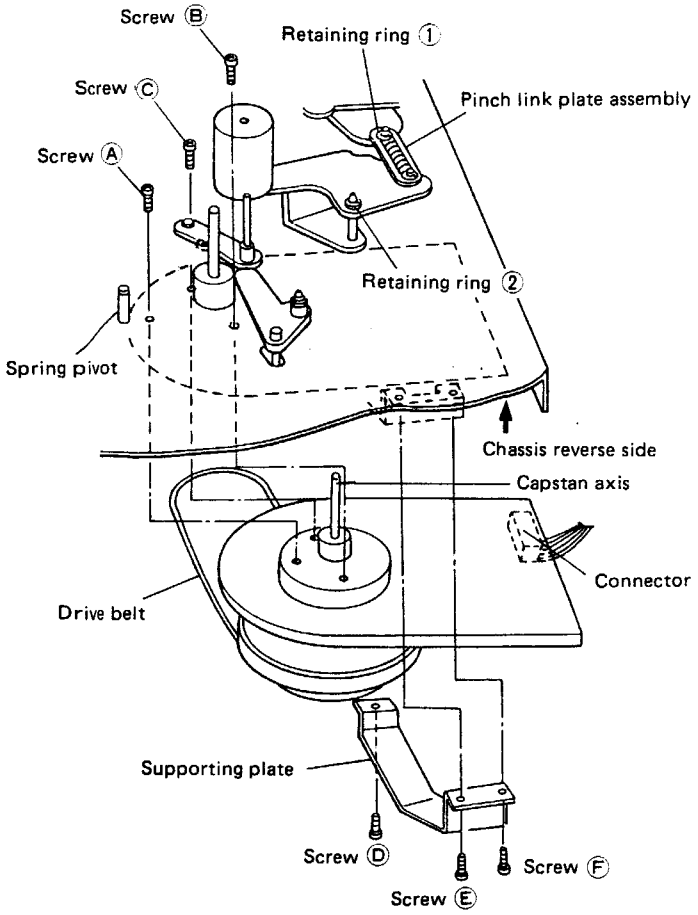


Fig. 20

1-12-8. Solenoids

1. Working from the reverse side of the chassis, remove the Ⓐ screw, then remove the brake solenoid assembly upwards, as shown in Fig. 21.
2. Replace the brake solenoid assembly and mount it into position.

Notes:

1. Insert the Ⓒ pin firmly into the hole of the B release lever.
2. Be sure to tighten down the screws so that the brake solenoid assembly is positioned as shown in Fig. 22.

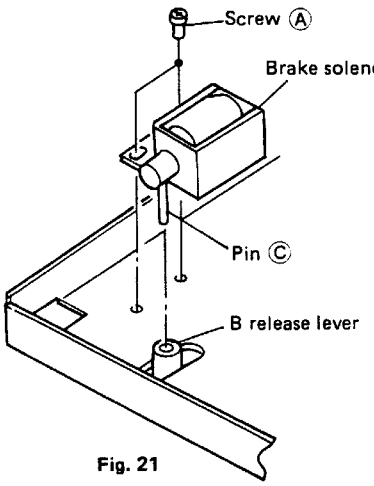


Fig. 21

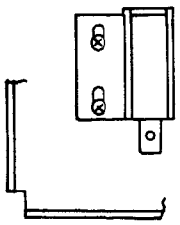


Fig. 22

1-12-9. Pinch arm SA (refer to Fig. 23)

1. Remove the ① retaining rings, then remove the ② pinch link plate assembly.
2. Remove the ③ retaining rings, and then remove the pinch arm SA upwards.
3. Replace the pinch arm SA and assemble it into position, following the above procedure in reverse.

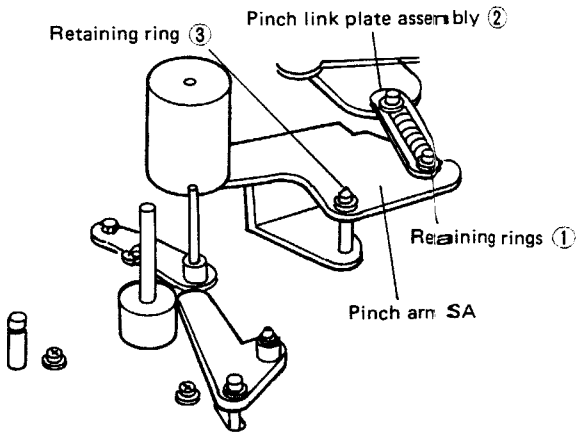


Fig. 23

1-12-10. Tension regulation band assembly

1. Remove the ① band holder of the tension regulation band assembly from the tension regulation arm assembly. Next, remove the ③ screw and remove the tension regulation band assembly. (Fig. 24)
2. Exchange the tension regulation band assembly with a new replacement and mount it into position, following the above procedure in reverse.
3. Adjust the tension regulation arm assembly according to the following procedure.

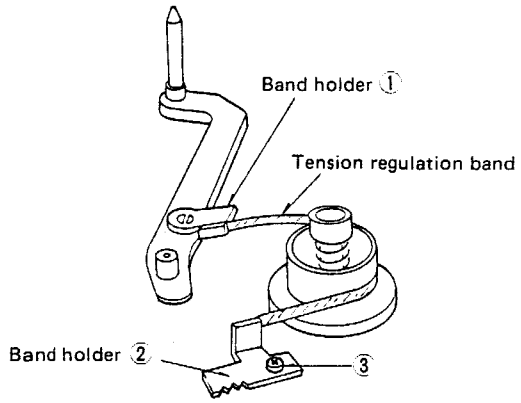


Fig. 24

Caution: Excessive pressure placed on the lever when replacing the band holder could bend it out of shape.

1-12-11. Adjusting the position of the tension regulation arm

1. With the cassette housing removed, activate the play mode.
3. Adjust the screw ① so that the left end of the tension regulation arm comes in alignment wit the chassis side and secure it firmly, as shown in Fig. 25.

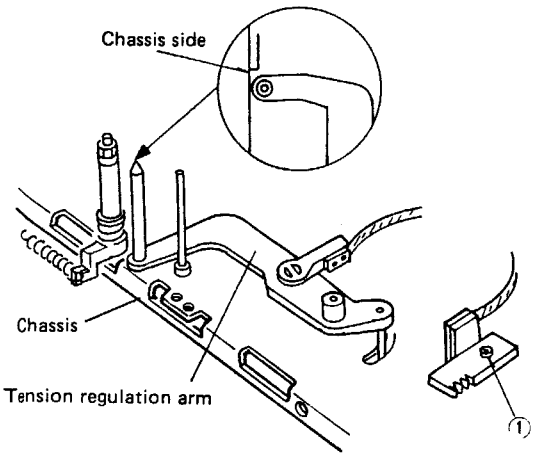


Fig. 25 Position of tension arm

1-12-12. Reel disc

Supply (S) reel disc (refer to Fig. 26)

1. Remove the ① retaining ring, and remove the S soft brake upwards.
2. Remove the retaining ring from the reverse side of the tension regulation arm, then remove the ③ screw and following that, remove the tension regulation band.
3. Remove the ② retaining ring, and then remove the supply reel disc upwards.
4. Replace the supply reel disc and mount it into position, following the above procedure in reverse.

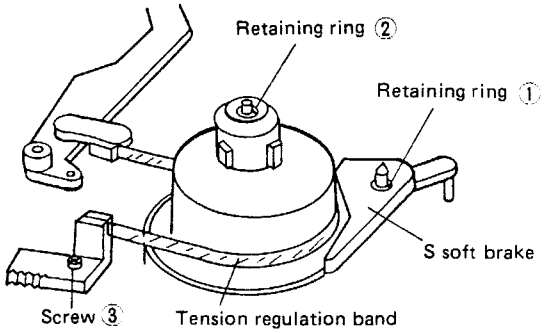


Fig. 26

1-12-13. Take-up reel disc (refer to Fig. 27)

1. Remove the ④ spring and the ① retaining ring, then remove the R soft brake upwards.
2. Remove the ⑤ spring and the ③ retaining ring, then remove the TU soft brake upwards.
3. Remove the ② retaining ring, then remove the take-up reel disc upwards.
4. Replace the reel disc and mount it into position, following the above procedure in reverse.

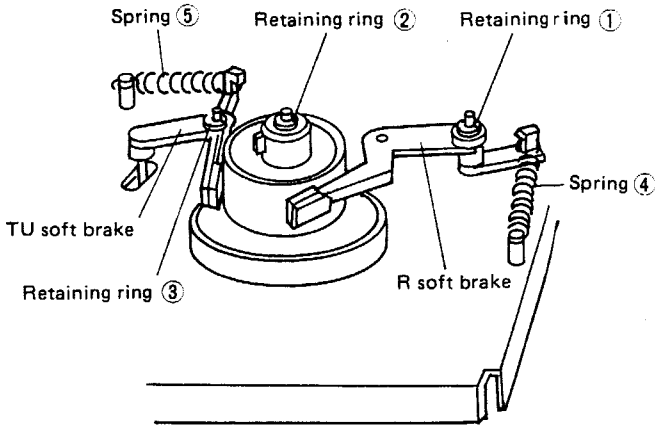


Fig. 27

1-12-14. Adjustments when replacing the supply and take-up reels

Height adjustment of reel disk (height confirmation of supply and take-up reel disks)
Set the master plane B jig (J-13) on the disk.

Next place the Height Gauge B Jig (J-15) in the positions shown by the two arrows in Figure 27-a with the surface marked with an "R" facing up, slide as shown in Figure 27-b, and verify that the A Surface of the Height Gauge B Jig (J-15) slides over the upper surface of the reel table and that B Surface does not.

If reel disk is outside this range, use polyester washers to make adjustments (Fig. 27-c).

Part numbers of polyester washers

16628731 . . . . . thickness 0.5mm
16288001 . . . . . thisckness 0.13mm

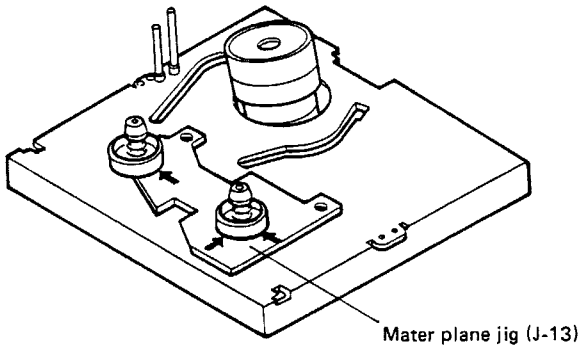


Fig. 27-a

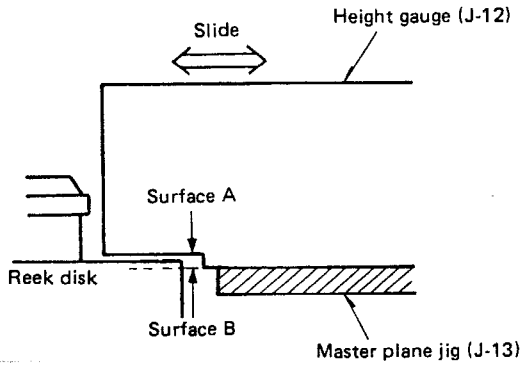


Fig. 27-b

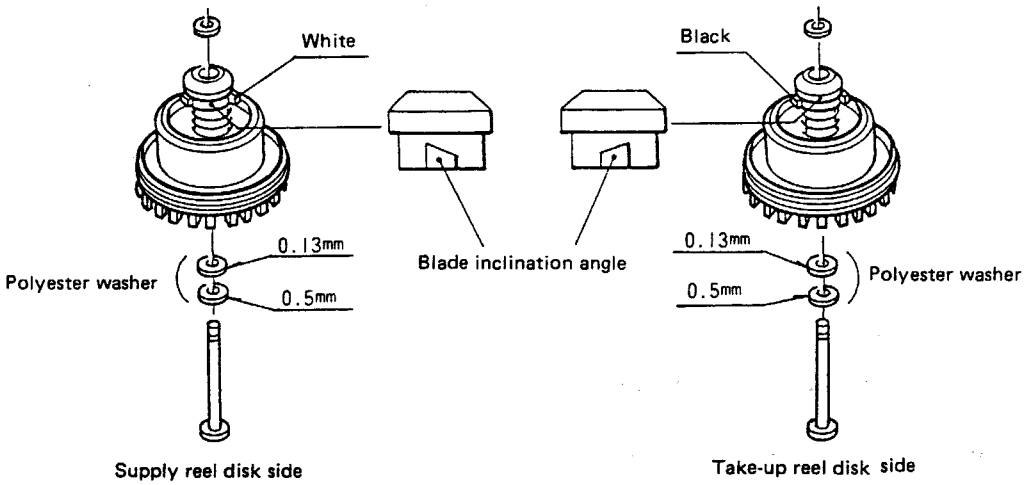


Fig. 27-c

1-12-15. Tension regulation arm assembly (refer to Fig. 28)

1. Remove the ① screw, then remove the tension regulation band assembly from the tension regulation arm assembly.
2. Remove the ② retaining ring from the reverse side of the chassis.
3. Remove the tension regulation arm assembly upwards.
4. Replace the tension regulation arm assembly and mount it into position, following the above procedure in reverse.

Note:

- When assembling the tension regulation arm assembly into place, pin Ⓐ should fall into position Ⓒ, as shown in Fig. 29.
- Adjust the position of the tension regulation arm referring to item 1-12-11.

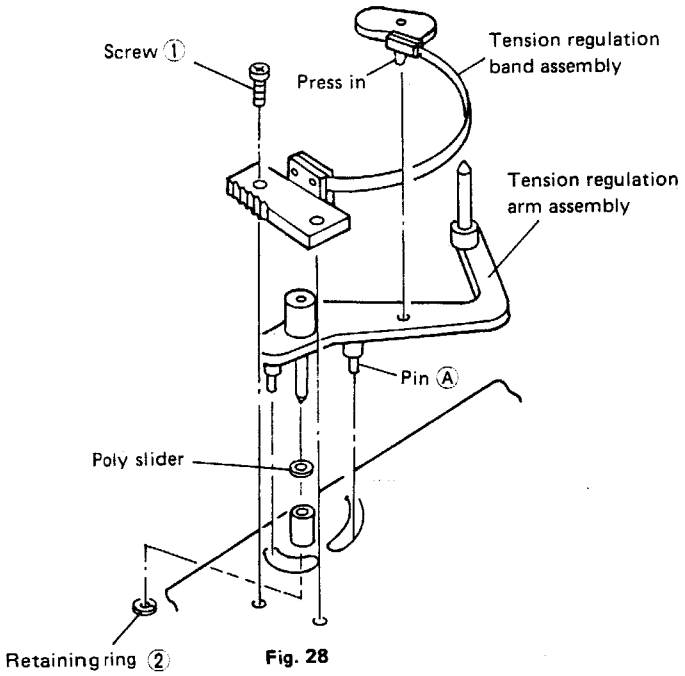


Fig. 28

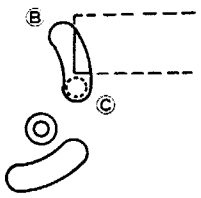


Fig. 29

1-12-16. Measuring and checking the FWD reel torque

1. Remove the cassette housing and set the power button to ON while pressing the cassette IN switch. (Use procedure is not under para 1-8, page 1-10)
2. Activate the FWD mode (the Cassette IN switch can now be released.)
3. Set the torque gauge on the take-up reel disc base and measure the torque.
4. FWD torque rating: 150 gcm ± 23 gcm.

1-12-17. Measuring and checking the braking torque

Be sure to carry out the following measurements after the brake arm (R), (L) has been replaced.

1. Remove the cassette housing.
2. Before measuring the torque of the brake arm (L), lightly push the S soft brake in the direction indicated by the arrow, then release the tension regulation band from the reel base.
3. Place a torque gauge on the S reel base. Grasping the torque gauge lightly, turn it clockwise, and read out the value when the meter face plate begins to move along together with the meter needle. Check that this value falls between 250 – 400 gcm.
4. Using the same procedure as above, light grasp the torque gauge, turn the gauge counterclockwise, and read out the value when the meter face plate begins to move along with the meter needle. Check that this value falls between 50 – 170 gcm.

Note:

1. When measuring the brake arm (R) TU reel torque, lightly push the TU soft brake so that it releases from the reel base, following the same procedure as for when measuring the torque of the S soft brake.
2. If the measured value deviates excessively from the appropriate values, carefully check the springs, etc.

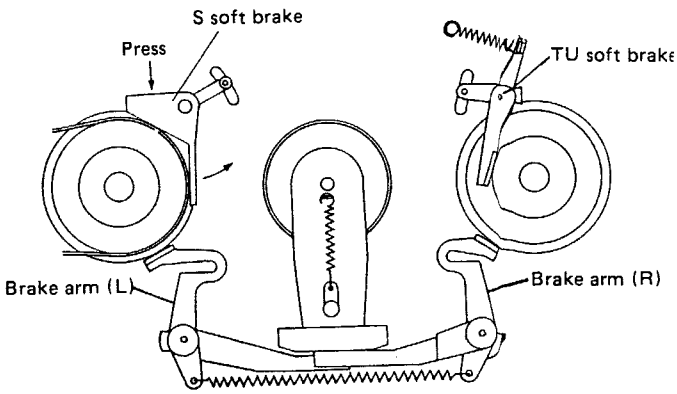


Fig. 30

SECTION 2
CHECKING AND ADJUSTING THE TAPE PATH (N9013G/N9014G)

Since the tape transport system comes precision adjusted as delivered form the factory, normally there will be no need to carry out this procedure. However, after extensive use and also when parts of the tape transport system have been replaced, it will be necessary to check and adjust the tape path and the tape transprot system.

2-1. Checking the tape transport system

1. Use a E-120 cassette tape.
2. Use a cleaning cloth soaked in alcohol (isopropyl alcohol) to clean the parts of the tape transport system that come into direct contact with the tape surface (tape guide, tape contact surface of drum, capstan shaft, pinch roller, surface of ACE and FE heads, etc.).
3. Use the cassette tape to check the following points.
4. Operate the PLAY and STOP modes a few time to ensure the proper operation.
5. In the PLAY, CUE and REV modes, check the supply guide roller, supply guide pole, take-up guide roller, take-up guide pole and reverse pin for proper functions. Also, check each pole to see that the tape is not wrinkled. If wrinkled, make adjustments referring to item 2-2.

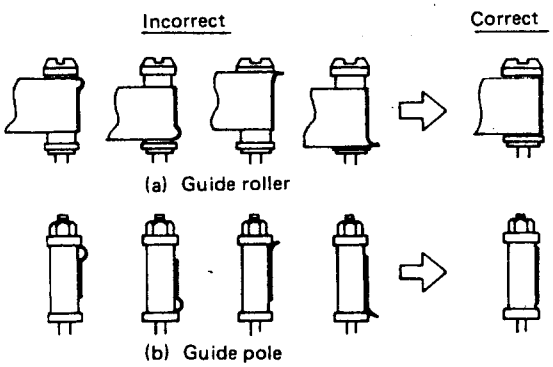


Fig. 31 Guide roller, guide pole

6. As shown in Fig. 32, when the PLAY, CUE and REV modes are activated, be sure that tape undulation does not occur at points Ⓐ and Ⓑ. Point Ⓐ can be checked by removing the impedance roller from the tape.
7. Repeat the REV and CUE modes a few times alternately to check that the tape is not moving up and down at and the lower area of the ACE head.

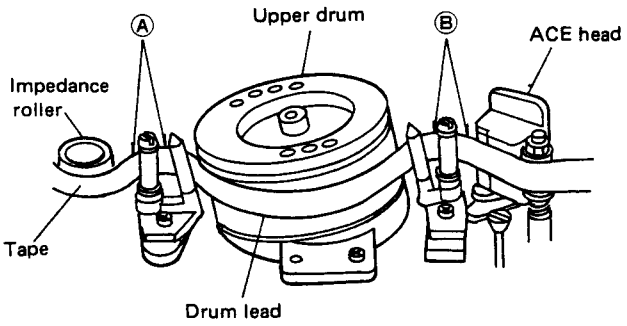


Fig. 32 Checking the drum lead

2-2. Adjusting the tape transport system

Carry out this procedure only if the above 2-1 reveals the presence of malfunctions in the tape transport system.

Note:

- When the tape transport system has been adjusted, be sure to carry out interchangeable adjustments.

2-2-1. Adjust the guide roller height (height adjustment of vertical pole).

1. As shown in Fig. 33, loosen the screws of the supply guide roller and the take-up guide roller (until the guide roller can be turned lightly with an adjusting screwdriver)

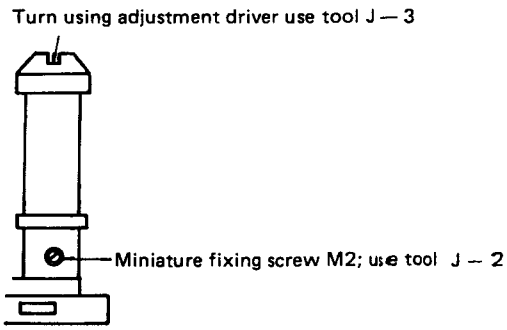


Fig. 33 Adjusting the guide roller height

2. Using a cassette tape, activate the PLAY mode.
3. Rotate the supply guide roller with the adjustment screwdriver (J-3) until the wrinkles of the tape disappear at the upper and lower flanges.
4. Following the same procedure, adjust the take-up guide roller.

2-2-2. Adjusting the guide pole height, adjusting the reverse pin height

Note:
When adjusting the take-up guide pole height, be sure to remove the cap.

[A] Adjusting the guide pole height and reverse pin height

1. To adjust the height of the supply-side guide pole, set Height Gauge A Jig (J-12) on the chassis as shown in Figure 34, and use the nylon not to adjust to the height of the lower surface of the upper flange.
2. To adjust the height of the take-up-side guide pole, place the Master Plane A Jig (J-14) on the chassis as shown in Figure 35-a, place Height Gauge A Jig (J-12) on J-14 with the side marked "TU" facing up, and use the nylon nut to adjust to the height of the lower surface of the upper flange.

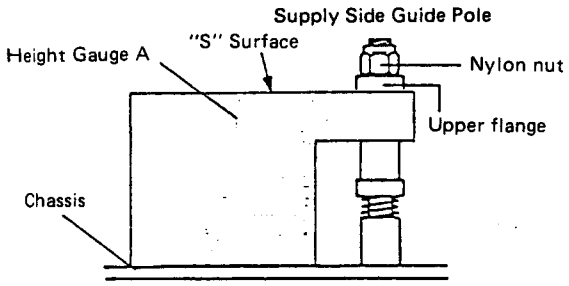


Fig. 34 Adjusting the guide pole height

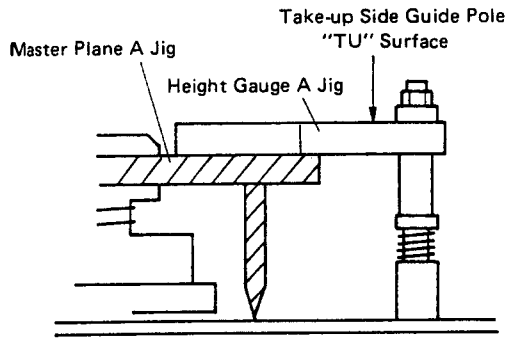


Fig. 35-a

3 To adjust the height of the reverse pin, follow the procedure for adjustment of the height of the take-up-side guide pole as shown in Figure 35-b, set Hiehgt Gauge A Jig (J-12) with the side marked "REV" facing up, and use the nylon nut to adjust to the height of the lower surface of the uppwr flange.

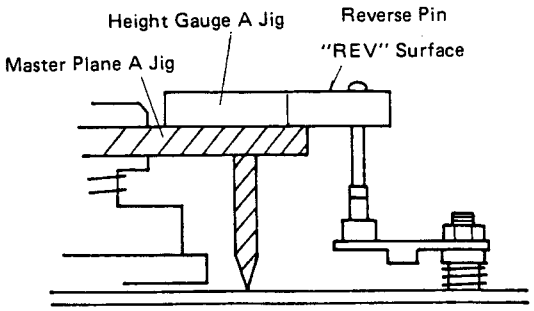


Fig. 35-b

[B] Micro-adjustment of the Supply and Take-up guide pole heights

1. Using a E-120 cassette tape, activate the PLAY mode.
2. As indicated in Fig. 35 using a box driver (J-5), adjust the guide pole so that tape wrinkling, etc. disappears.
3. If it is impossible to adjust the guide pole heights within the aforementioned range, check the tension pin, other parts and the height of the supply reel disc.

SECTION 3
INTERCOMPATIBILITY ADJUSTMENTS (N9013G/N9014G)

Since these adjustments have a significant effect on the picture quality in the respective modes, as well as affecting the degree of tape intercompatibility, be sure to carry out the following procedures carefully and thoroughly.

3-1. Checking the FM waveforms

3-1-1. Check 1: Checking the playback switching point

1. Play an alignment tape (MH-2).
2. Connect channel 1 of the oscilloscope to test pin TP-5 of the VIDEO circuit board.
   Connect channel 2 of the oscilloscope to test pin TP-1 of the RF switching pulse. (REF. 25Hz)
3. Confirm that the playback switching point is at 6.5 H. (Fig. 37).
4. If the playback switching point is not 6.5H, adjust VR303 on the S/S/A/R/ circuit board until is set to 6.5H.

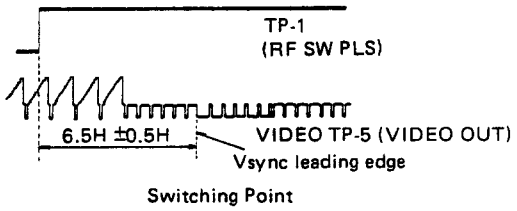


Fig. 37 Playback switching point

3-1-2. Check 2: Checking the FM waveform

1. Connect TP-12 of the VIDEO circuit board to CH-1 of the oscilloscope. When carrying out this procedure, connect TP-1 of the VIDEO circuit board to the oscilloscope as an external synchronization terminal.
2. Play back the (MH-2) alignment tape.
3. Turn the tracking knob until the FM waveform output is at its maximum point.
4. As shown in Fig. 38, read the FM waveforms with a level corresponding to (a). If the waveform should be a saw tooth wave, try to have the level read where the saw tooth waves are relatively uniform.

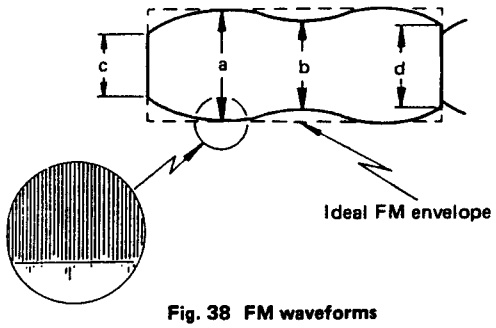


Fig. 38 FM waveforms

5. Read the FM waveforms, using a level corresponding to (b), and check the following:

$$\frac{b}{a} \geqq 0.8$$

6. In the same manner, read the FM waveforms, using levels corresponding to (c) (drum entrance) and (d) (drum exit), then check the following:

$$\frac{c}{a} \geqq 0.8 \ , \quad \frac{d}{a} \geqq 0.8$$

Cautions

1) Read the minimum levels of (b), (c) and (d).
2) If the values read fall within the above ranges, move on to the following "Check 3,-1-3".
3) If any malfunction should be detected, carry out the coarse adjustment procedure of Step 3-2.

3-1-3. Check 3:

1. As mentioned previously, (also connect an oscilloscope in accordance with Check 2), turn the tracking knob while viewing the FM waveforms. Confirm that those waveforms change linearly as shown in Fig. 39. If a linear change can be confirmed, commence the ACE head height and azimuth adjustment procedure for step 3-4.

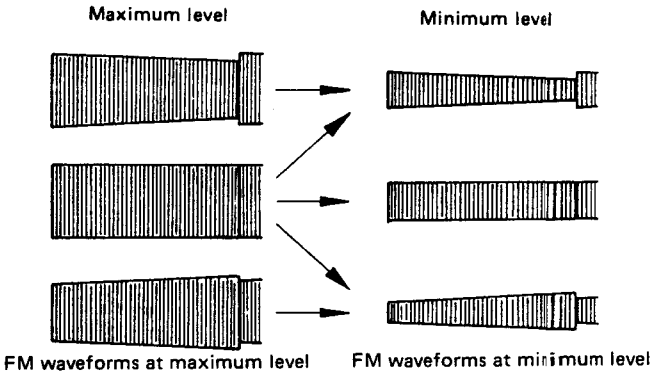


Fig. 39 Example of normal waveforms

2. If there are many different waveforms, as shown in Fig. 40, the microadjustment of step 3-3 will become necessary.

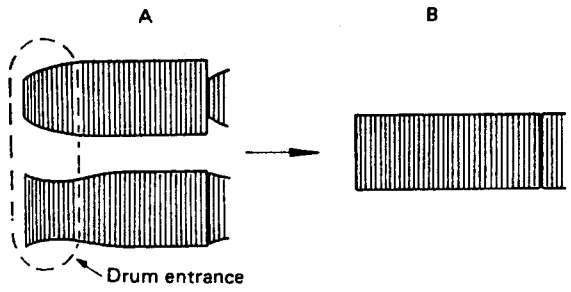
Fig. 40 Example of improper waveforms (malfunctioning)

3-2. Coarse adjustment of FM waveforms (preliminary adjustments)

1. Use the J-2 hexagonal driver to loosen the fixing screws for the supply guide roller and take-up guide roller sufficiently so that the guide roller can be adjusted.
2. Connect channel 1 of the oscilloscope to TP-12 of the video circuit board, and connect TP-1 of the video circuit board to channel 2 of the oscilloscope as an external synchronization terminal.
3. Playback the (MH-2) alignment tape.

3-2-1. Drum entrance side

1. While viewing the oscilloscope, adjust the tracking knob so that the FM waveforms are at maximum amplitude.
2. If the FM waveforms look like A of Fig. 41, adjust the supply guide roller until the FM waveforms look like B of Fig. 41.



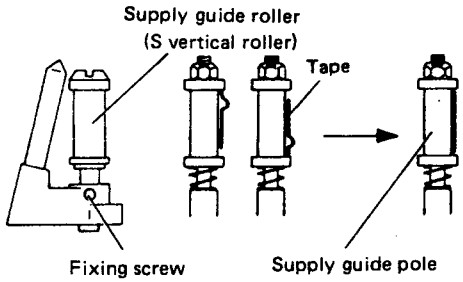


Fig. 41 Adjustment of drum entrance

Precautions:

1) Lightly tighten the fixing screws so the guide roller height adjustments screw can rotate freely. (Adjust within range possible by using tool J-3).
2) To revent damage to the alignment tape (MH-2), adjust guide roller by a small mount at a time.
3) Observe the waveforms and, at the same time, check to see that the tape is not wrinkled at the drum leadeage and guide poles.

3-2-2. Drum exit.

1. Using the same procedure as for the drum entrance (rotate the take-up guide roller), adjust the FM waveforms.
   If the FM waveforms look like C of Fig. 42, rotate the take-up guide roller until the FM waveforms have been adjusted so that they look like D of Fig. 42.

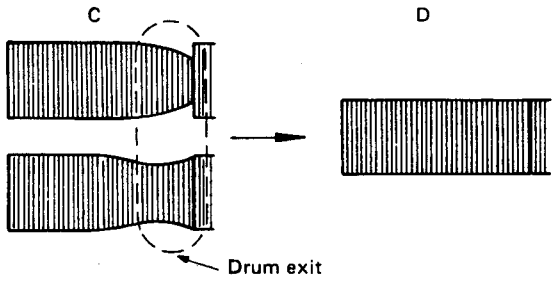


Fig. 42 Drum exit

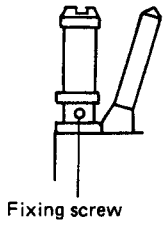


Fig. 43 Adjustment of drum exit

3-3. Microadjustment for intercompatibility

1. With an oscilloscope connected to test pin TP-12 of the video circuit board, also connect the oscilloscope to the TP-1 on the same circuit board for external sync and play back the (MH-2) alignement tape.
   While viewing the FM waveforms, adjust the tracking control so that the FM output level is at its minimum position.
2. If the FM waveforms look like A and B of Fig. 44, with the FM waveform output set to its minimum position, carefully adjust the height of the supply guide roller so that the FM waveforms look like E, F or G of Fig. 45.

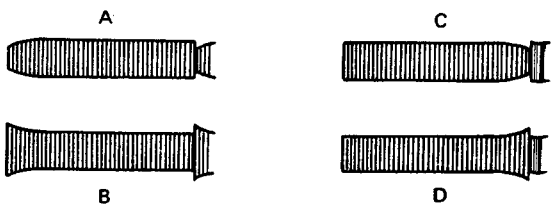


Fig. 44 Minimum FM output (poor example)

3. If the FM waveforms look like C and D of Fig. 44, with the FM waveform output set to its minimum position, carefully adjust the take-up guide roller so that the FM waveforms look like E, F or G of Fig. 45.

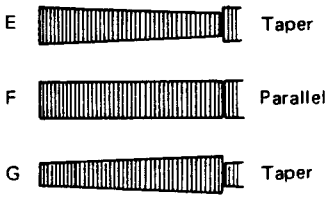


Fig. 45 Minimum FM output (good example)

4. While turning the tracking knob so that the FM waveform output shifts between the minimum and maximum positions and vice versa, microadjust the supply and take-up guide poles so that the FM waveforms look like E, F or G of Fig. 45.

Once the above adjustments is completed, check that tape transport functions properly, then carefully tighten the fixing screws.

3-4. ACE head height and azimuth

If the height of the audio control head is incorrect, a poor SN ratio will result when reproducing prerecorded tapes. Refer to Fig. 46.

1. Connnect channel 1 of an oscilloscope to the AUDIO OUT jack on the rear panel of the unit.
2. Using the MH2 alignment tube, playback the 6kHz audio signal.
3. While viewing the audio output signal, adjust the azimuth screw so that maximum output level is achieved.
4. Next adjust height adjustment nut Ⓑ so that maximum output level is obtained, as indicated in Fig. 46.
5. Push head toward rear small amount (see arrow), release and recheck adjustment.

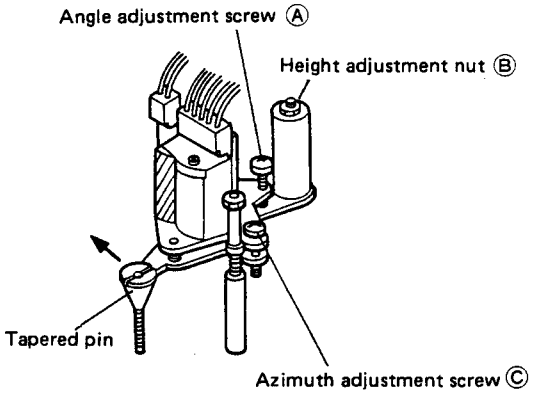


Fig. 46

3-5. Adjusting the CTL position

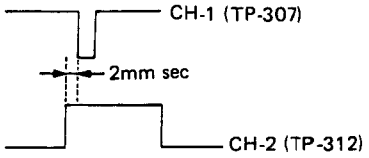
3-5-1. Adjusting subtracking

1. Connect oscilloscope CH1 to S/S/A/R Board test pin TP307, and grand to TP301 and CH2 to S/S/A/R Board test pin TP312 or to Video Board TP4.
2. Playback the (MH-2) alignment tape.
3. Adjust VR302 so that the V sync is aligned with the leading edge transient of the RF switching pulse, as indicated in Fig. 47.

Note:
The tracking knob should be set in the center position.

3-5-2. Adjusting the ACE head position

1. Connect oscilloscope CH1 to Video Board test pin TP-12 and CH2 to Video Board test pin TP-1.



2. Play a standard tape (MH-1M) and turn the taper pin (Fig. 46), so that a maximum FM waveform is obtained in the center position of the tracking knob.

3-6. Final testing and checking

1. Connect channel 1 of the oscilloscope to test pin TP-5 of the video circuit board and connect channel 2 to test pin TP4. (Use a black & white stairstep test pattern)
2. Adjust VR306 so that the REC timing is 6.5H.
3. Record this signal onto a blank tape.

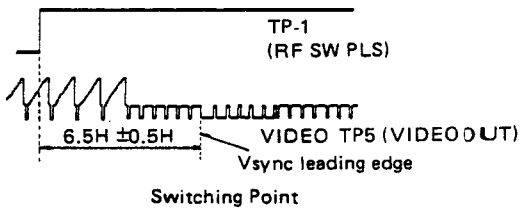


Fig. 48

4. Check the FM waveforms thus recorded onto the tape. Playback the tape after first connecting channel 1 of the oscilloscope to test pin TP-12 of the video circuit board and channel 2 to test pin TP-1.
5. When carrying out this precedure, confirm that the value A/B for the degree of evenness is in excess of 08, or in excess of 0.85 if minor fluctuations are occurring.

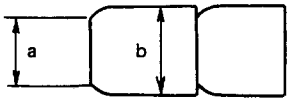


Fig. 49

After carrying out the above test and adjustment procedures, while confirming that the tape transport operation is functioning properly, plase locking point on the tapered pin screw.

SECTION 4
ELECTRICAL ADJUSTMENTS (N9013G/N9014G)

4-1. Preparation

Electrical adjustments are required after replacing circuit components and certain mechanical parts. It is important to perform these adjustments only after all repairs and replacements have been completed.

4-1-1. Required test equipemnt and jig

1. Color TV Monitor
2. Oscilloscope: Wideband
3. Signal generator: Color bar, Stairstep
4. Audio generator
5. Digital voltmeter
6. Alignment tape (MH-2)
7. Tape: E-90, E-120.

4-1-2. Alignment tape contents

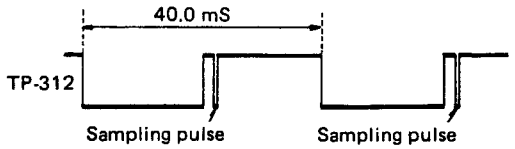
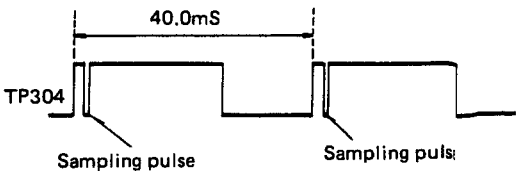
1. MH-2

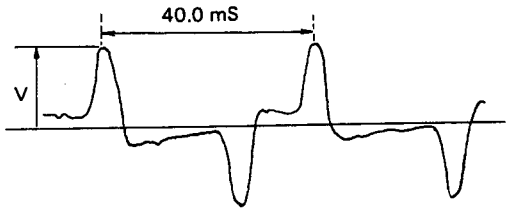
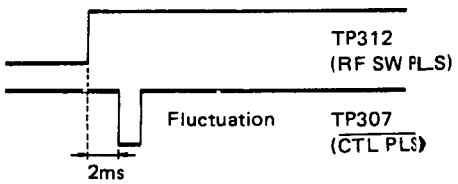
Segment	Playback Time	Video Signal	Audio Signal	Applications
1	10 minutes	Stairstep	6 kHz	• Interchangeability checks and adjustments • Servo circuit checks and adjustments • Audio head azimuth adjustments
2	5 minutes	(none)	3 kHz	• Tape speed checks • Wow and flutter checks
3	10 minutes	Color bar	1 kHz 0 dB	• Video signal playback circuit checks and adjustments • Audio signal playback circuit checks and adjustments
4	3 minutes	RF sweep	(none)	• Video head resonance adjustments • Marker: 2.0, 4.0, 5.0 MHz

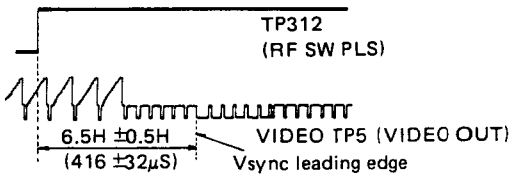
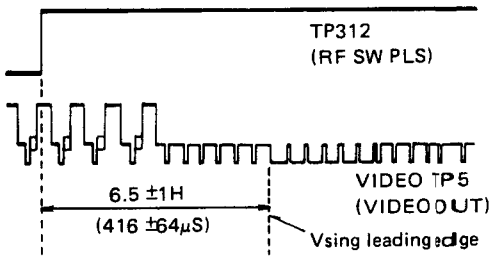
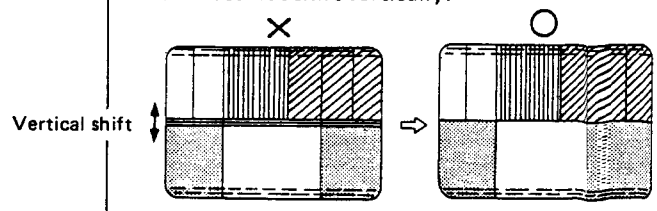
MH-2 contents

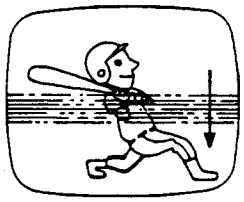
4-2. Servo circuit

Note: Check item No. 1 – 3 are conditions necessary when performing adjustment.

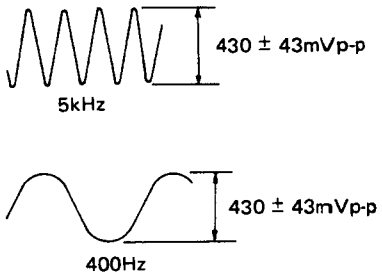
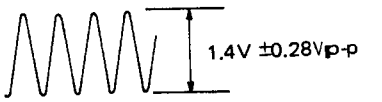
No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	Drum Lock Check	TP312 (RF SW PLS)	Confirm	TV Signal	1. Connect an oscilloscope to TP312 of the S/S/A/R board (TP302, GND) 2. Short-circuit pins 2 – 3 of connector CN15 (TEST). 3. Record the TV signal. 4. On the oscilloscope display, confirm that the waveform of the sampling pulse is locked to the RF SW PULSE with a phase relation as shown in the diagram below. 5. Confirm that when the short-circuit of pins 2 – 3 of CN15 is removed, the sampling pulse disappears, turning into a regular RF SW PLS. 6. If the above can not be confirmed, a mulfunction in the drum servo circuitry can be assumed.  Drum lock
2	Capstan lock	TP304 (Reference 25)	Confrim	TV Signal	1. Connect an oscilloscope to TP304 of the S/S/A/R board. 2. Short-circuit pins 2 – 3 of connector CN15 (TEST). 3. Record the TV signal, approx A ten count. 4. On the oscilloscope display, confirm that the waveform of the sampling pulse is locked to the REFERENCE 25 pulse with a phase relation as shown in the diagram below. 5. Playback the recorded area, and confirm that the waveform locks, the same as shwon in the above step 4. 6. Confirm that when the short-circuit of pins 2 – 3 of CN15 is removed, the sampling pulse disappears, turning into a regular REFERENCE 25 pulse. 7. If the above can not be confirmed, a malfunction in the capstan servo circuitry can be assumed. **Note:** The Reference 25 pulse is a 25.13Hz standard signal obtained by division of the 4.43MHz signal from the crystal oscillator.  Capstan lock

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
3	CTL level	TP306 (PB CTL)	Check only	MH-2 P.B	1. Connect an oscilloscope to TP306. 2. Playback MH-2, and confrim that the servo is functioning. (Stairstep) 3. Viewing the waveform on the oscilloscope display, confirm that the voltage V, shown in the figure, is in excess of 450mV, and also that the level does not fluctuate drastically. 4. If the above can not be confirmed, perform the alignment tape adjustment.  PBCTL
4	Tracking SUB VR	TP312 (RF SW PLS) TP307 (CTL PLS)	VR302 (TRACK-ING SUB)	MH-2 P.B	1. Connect an oscilloscope to TP312 and TP307, respectively. 2. Playback MH-2 (Stairstep), and adjust VR302 until the waveforms have the phase relationship shown in the diagram below. (Although the TP307 waveform will fluctuate when TP312 is used as the trigger, adjust VR302 to the fluctuation center value.) **Note:** Be sure that the Tracking VR (knob) is set to the center click position.  Tracking Center Adjustment

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
5	CH1 switching point	TP312 (S/S/A/R) TP5 (VDIEO board)	VR303 (CH1 SW POINT)	MH-2	1. Connect an oscilloscope to TP312 (S/S/A/R board), and TP5 (VIDEO board). 2. Playback the alignment tape (Stairstep) shwon on the left, adjust the tracking VR for optimum tracking while watching the monitor screen. 3. While viewing the oscilloscope display, adjust VR303 so that the phase relationship between the RF SW PULSE and the reproduced video signal is as shown in the diagram below.  Switching Point
6	REC TIMING	TP312 (RF SW PLS) TP5 (VIDEO board) (VIDEO OUT)	VR306 (REC)	Color bar REC	1. Connect an oscilloscope to TP312 (RF SW PLS) (S/S/A/R board), and TP1 (VIDEO out) (VIDEO board). 2. Operating in the REC mode, adjust VR306 (REC TIMING) so that the phase relationship between the TP312 and TP5 waveforms is as shown in the diagram below.  REC TIMING
7	INSERT VD	TV Screen	VR304 (INSERT VD PHASE)	Color bar REC, PB TAPE E-120	1. Record the color bar signal for 1 minute or longer. 2. Playback the recorded section and set the unit to the STILL mode. 3. Press the STILL button again and make sure that there are alternate fields with high and low noise. Adjust for the state of minimum noise on the screen. 4. Adjust VR304 so that the center line of the color bars does not shift vertically.  VD Adjustment (Still mode)

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
8	FRAME ADVANCE SPEED	TV Screen	VR305 (FRAME ADV. SPEED)	TV signal REC E-90	1. Record a TV signal onto E-90 tape. 2. Using the STILL mode, reproduce the recorded signals, and activate the FRAME ADVANCE mode by holding down the STILL button. 3. Adjust VR305 so that the frame advance speed is 1 frame/sec.  Frame advance

4-3. Audio Circuit

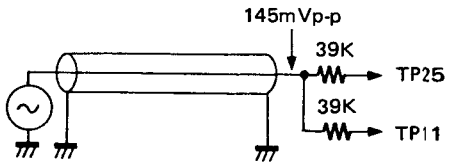
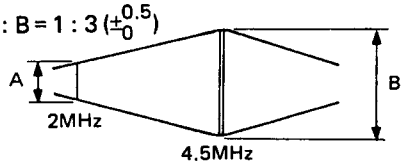
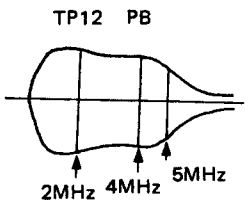
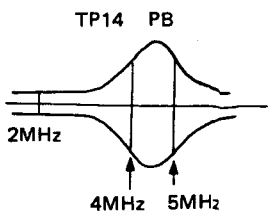
No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	Audio Bias Level	S/S/A/R PWB TP501, 502	VR501 (BIAS CURRENT)	No signal REC	1. Connect an AC Millivolt Meter to TP501 (⊕), TP502 (⊖) of the A/C Head board. 2. Set for REC mode without signal. 3. Adjust VR501 for 2.2 ±0.1 mV rms.
2	Audio EQ Level	AUDIO OUT	R502 (PB EQ)	-30dBs/400Hz and 5kHz Color bar (PAL) REC → P.B	1. Connect an oscilloscope to AUDIO OUT. 2. Supply an audio signal (400Hz and 5kHz, -30dBs, 75mVp-p) to AUDIO IN and record with a color bar signal, then playback. 3. Connect the AC Millivolt Meter to AUDIO OUT. 4. Insert a cassette and make a recording 400Hz first then 5kHz signal in the SP mode. 5. Playback the portion just recorded. 6. Adjust the PB EQ (VR502) so that the 400Hz and 5kHz outputs are balanced.  AUDIO OUT
3	Audio P.B Level	AUDIO OUT	VR503 P.B. LEVEL	MH-2 Color Bar P.B	1. Connect an oscilloscope to AUDIO OUT. 2. Play the alignment tape MH-2 (Audio 1kHz signal). 3. Adjust VR503 for -4 ±2dBs (1.4 ±0.28 Vp-p) at AUDIO OUT.  AUDIO OUT

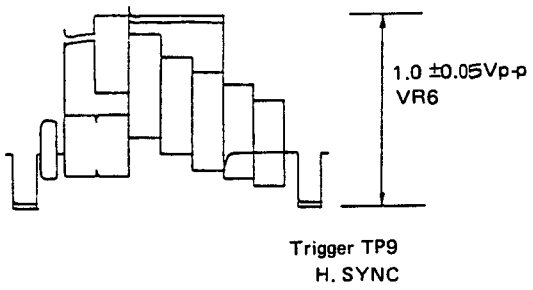
Note: 0 db = 0.775 volts into high Z load (>47k ohm).

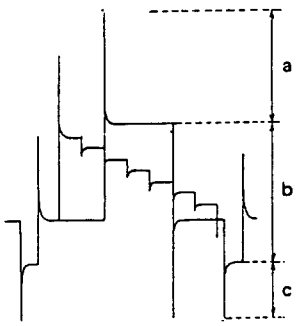
4-4. Tuner /IF Circuit

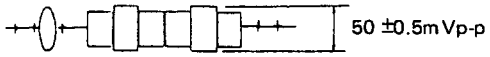
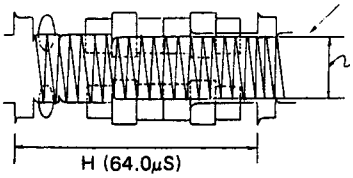
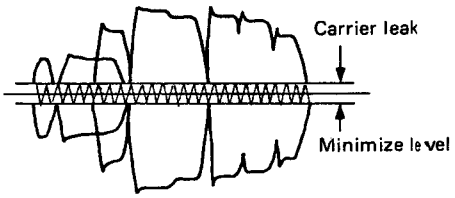
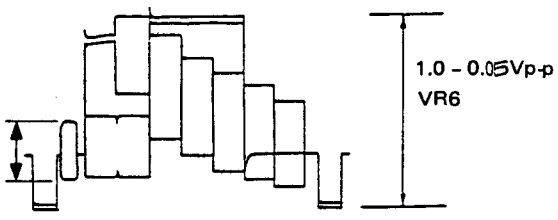
No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	AFT	TP4 (VIDEO OUT)	T2 (AFT)	21 – 69 ch	1. Receive a color broadcast corresponding to band 21 – 69 ch. 2. Set the AFT SW to OFF and perform fine tuning. 3. Connect an oscilloscope to TP4 to the T/IF board. 4. Precisely measure the burst level of TP4. Make a note of this as level "a". 5. Set the AFT SW to ON and adjust T2 so that the burst level of TP4 becomes equal to level "a".
2	AGC	TV Screen	VR1 (AGC)	TV Broadcast	1. Receive a TV broadcast. 2. Adjust VR1 to minimize noise or streaks on the TV screen. 3. Check for absence of abnormality on all channels.
	Note: This adjustment is required to correct for excess noise in the picture or when streak type cross interference occurs due to strong interference fields.				

4-5. Video Circuit

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	Head resonance Q (using a sweep signal generator) (a) Factory service	TP25 TP12	VR8 C78	RF Sweep PB	1. Supply a 145mVpp sweep signal to TP25 from the sweep signal generator, through a 39k ohm resistor. 2. Set the mode to playback with no tape, and monitor the waveforms of TP12 with an oscilloscope. 3. Adjust C78 until the waveform peaks of TP12 are at 4.5MHz. 4. Next, adjust VR8 untill the waveform factor of 2MHz and 4.5MHz is 1 : 3.  A : B = 1 : 3 ($\pm^{0.5}_{0}$) 
		TP11 TP12	VR9 C79		5. In the same manner as above, connect the sweep signal generator to TP11 through a 39k ohm resistor. 6. Adjust VR9 and C79 to meet the above specifications.
	Withtout using a sweep signal generator (b) Non-Factory service	TP12 TP1 TP14	VR8 C78 (CH-R)	MH-2 RF Sweep PB	Note: The markers of MH-2 are 2MHz, 4MHz and 5MHz 1. Connect the trigger of the oscilloscope to TP1. 2. Playback the RF Sweep signal section of the alignment tape. 3. Set the trigger of the oscilloscope to positive, and monitor TP12 with the oscilloscope. 4. Rotate VR8 and adjust for the maximum level output level which does not oscillate. 5. Next, connect the oscilloscope to TP14, and C78 for the maximum level of the 4.5MHz playback waveform.  

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
		TP12 TP2 TP14	VR9 C79 (CH-L)		6. Set the trigger of the oscilloscope to negative, and monitor TP12 with the scope. 7. Rotate VR9 and adjust for the maximum level output level which does not oscillate. 8. Connect the oscilloscope to TP14, and adjust C79 in the same manner as above. 9. If there is any difference between the left and right channels, adjust eigher VR8 or VR9 downward. 10. Record a VIDEO signal, then playback. Confirm absence of flicker and black-with reversal in the reproduced picture. If necessary, carefully readjust VR8 and VR9.
2	Adjustment of AFC	TP20 TP23 (5V REG) TP19 (SUB CONV. OUT)	VR201	REC	1. Input a color bar signal, and set the unit tothe REC mode. 2. Connect TP20 and TP23 with a 470 ohm resistor. 3. Connect a frequency counter to TP19, and adjust VR201 for a counter reading of 623kHz ±2kHz.
3	EE Level	TP5 TP9 (Trigger)	VR1	Color bar STOP	1. Input the color bar signal to the VIDEO IN terminal. 2. Connect an oscilloscope to TP5. (75 ohms, VIDEO OUT) 3. Connect the trigger of the oscilloscope to TP9. 4. Adjust VR1 so that the signal level from the sync chip is 1.0 ±0.1Vp-p until the white peak.
4	PB Level	TP5 TP9 (Trigger)	VR6	PB MH-2	1. Connect a 75 ohms terminal load to the VI DEO OUT. 2. Playback the color bar position of the MH-2. 3. Connect the oscillocope to TP5 and connect the trigger of the oscilloscope to TP9. Adjust VR6 untill the waveforms being monitored appear as shown in the diagram below. 

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
5	Carrier deviation adjustment	TP7 TP5	VR5 VR4	REC MODE REC → PB	1. Set the TV/LINE switch on the front panel to the LINE side. Nothing is connected to the video input, and thus there are no signals applied to the video board. 2. Set the unit to the REC mode and connect the frequency counter to TP7. 3. Adjust VR5 so that the frequency becomes 3.85 ±0.04MHz. 4. Next, input the rated color bar signal to VIDEO IN (1Vp-p 75 ohm terminal load). 5. Connect a 75 ohm terminal load to VIDEO OUT. 6. Connect the oscilloscope to TP5, and monitor the waveforms. 7. Record and playback the signals. Check whether or not the playback waveforms monitored measured by the oscilloscope are have a level of 0.95 ±0.05Vp-p. If not, adjust VR4 and continue the cycle of recording, playback, and checking. VR4 is adjusted finally for a playback level of 0.95 ±0.05Vp-p. **Note:** Be sure that this adjustment is performed only after the adjustment described in ITEM 4 (PB Level Adjust) above has been completed.
6	White & Dark Clip	TP3 TP9 (Trigger)	VR2 (White clip) VR3 (Dark clip)	Color bar REC	1. Input a color bar signal. 2. Connect an oscilloscope to TP3 of the video board and connect the trigger of the oscilloscope to TP9. 3. Adjust VR2 (white clip) and VR3 (dark dip) as shown in the figure below White clip b : a = 1 : 0.8 ±0.05 Dark clip b : c = 1 : 0.4 ±0.05 Trigger TP9  TP3 White and Dark Clip
7	Adjusting the 4.43MHz VCO	TP21	VR205	MH-2 Color Bar PB	1. Connect the frequency counter to TP21. 2. Playback a MH-2 (color bar) alignment tape. 2 Adjust VR205 for a frequency of 4.43361 9MHz ±50Hz.

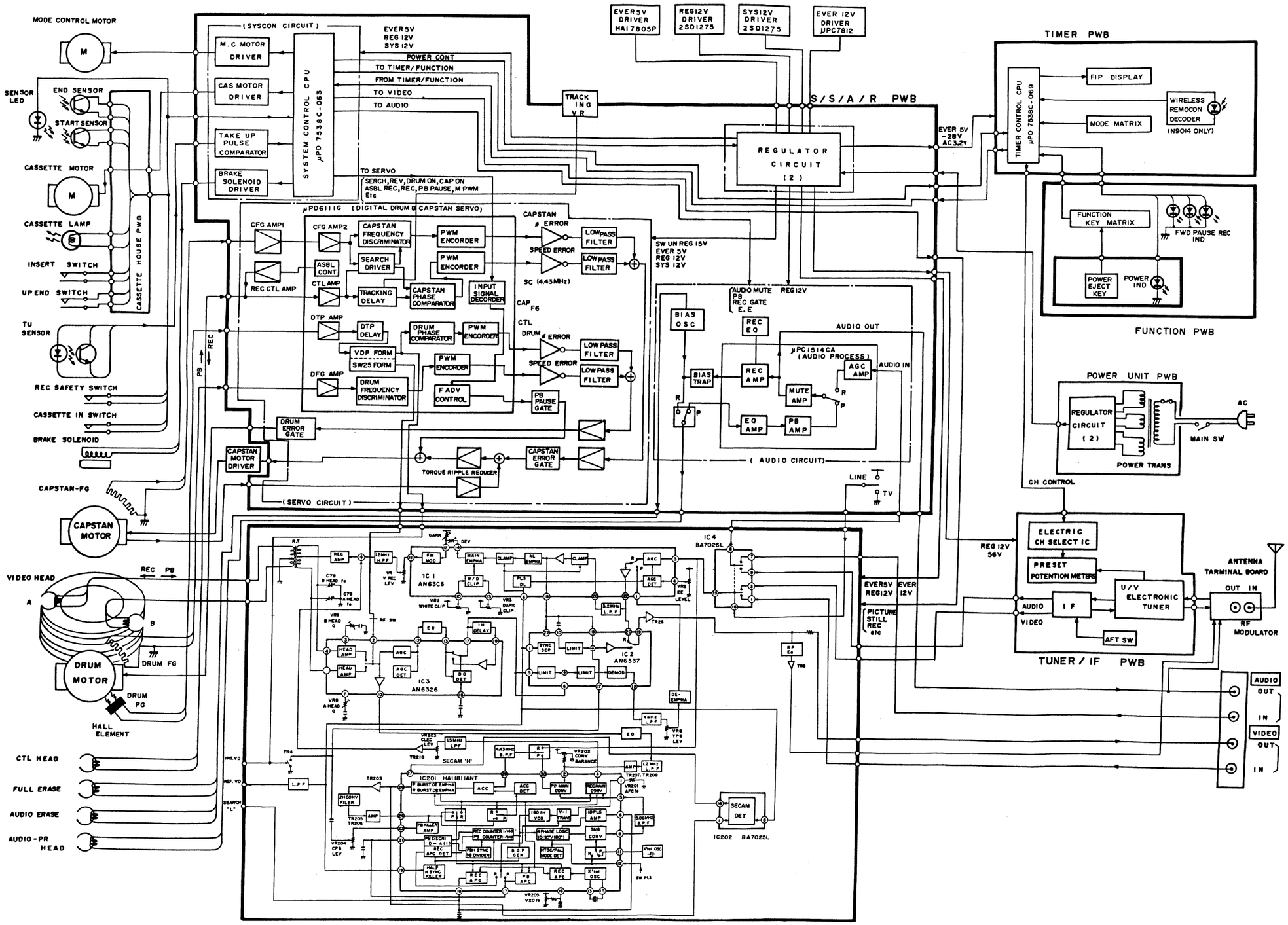
No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
8	Adjusting the REC color level	TP11 TP9 (Trigger)	VR7 VR203	Color Bar REC	1. Input a color bar signal to the VIDEO IN terminal 2. Connect an oscilloscope to TP11 and connect the trigger of the oscilloscope to TP9. 3. Adjust VR7 so that the Y. FM signal are at the minimum level (turn the VR as far as possible). 4. Adjust VR203 so that the Color level is as shown in the figure below. Trigger TP9  50 ±0.5mVp-p
9	REC Y FM level adjustment	TP11 TP9 (Trigger)	VR7	Color Bar REC	1. Input a color bar signal to the VIDEO IN terminal. 2. Connect an oscilloscope to TP11 and connect the trigger of the oscilloscope to TP9. 3. Adjust VR7 so that the waveforms which appear on the oscilloscope are as shown in the figure below. Amplitude of white peak section  125 ±5mVp-p H (64.0μS) Trigger TP9
10	Adjusting the CONVERTER BALANCE	TP16 TP9 (Trigger)	VR202	PB	1. Record and playback a color bar signal (or playback the MH-2 color bar). 2. Connect the oscilloscope to TP16. (The trigger is TP9 H-SYNC) 3. Adjust VR202 for the carrier leak of TP16 is at the minimum level.  Carrier leak Minimize level
11	PB VIDEO Level	TP5 TP9 (Trigger)	VR6 VR204	Color bar REC → PB	1. Terminate the VIDEO OUT terminal into a 75 ohms load. 2. Connect an oscilloscope to TP5. 3. Input a color bar signal tothe VIDEO IN terminal, and record it. 4. Playback the recorded signals. 5. Adjust VR6, VR204 so that the waveforms which appear on the oscilloscope are as shown in the figure below.  1.0 - 0.05Vp-p VR6 0.25 ±0.05[Vp-p] (VR204) Trigger TP9

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
12	SECAM DET	TP24	VR206	REC	1. Input the SECAM signal and select the REC mode. 2. Monitor the waveforms of TP24, and adjust VR206 until the following values are obtained. A : 4Vp-p ± 0.25Vp-p 3. Playback the following recorded section, and confirm that the value of A is at least 3.5Vp-p.

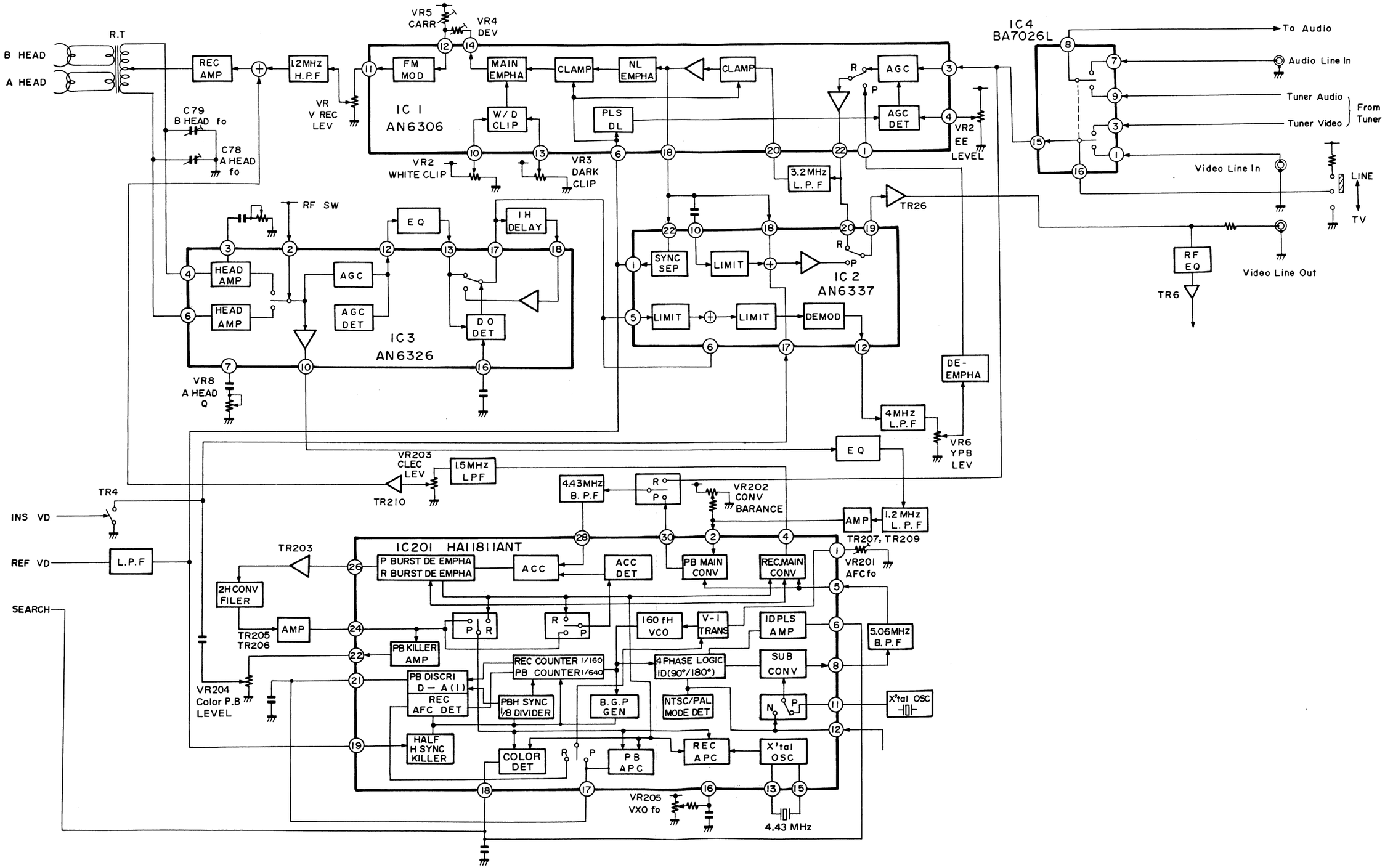
SECTION 5 CHART AND DIAGRAMS

5-1. BLOCK DIAGRAM

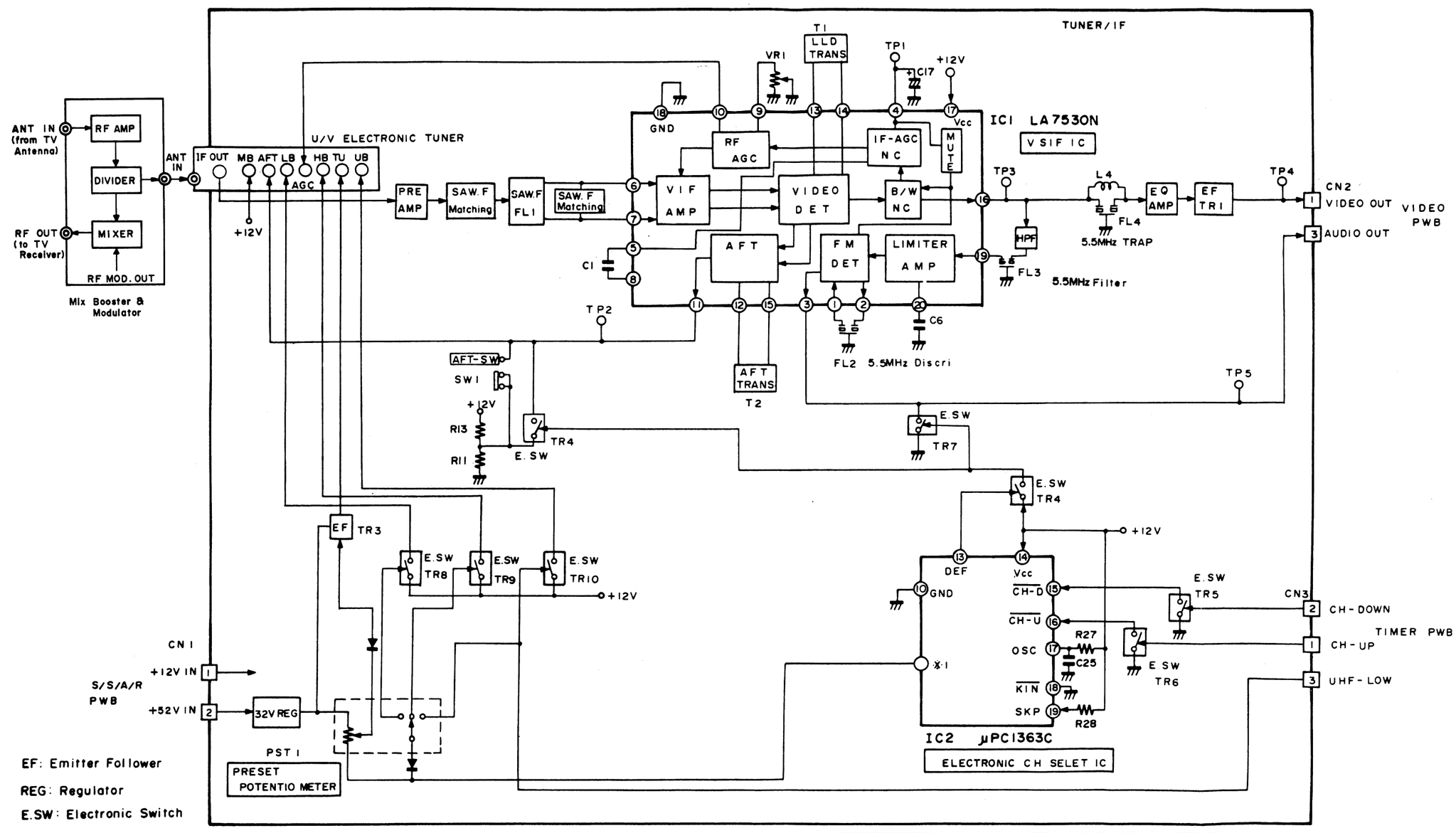
5-1-1. General block diagram (N9013G/N9014G)



5-1-2. Video block diagram (N9013G/N9014G)



5-1-3. Tuner IF diagram (N9013G/N9014G)



EF: Emitter Follower

REG: Regulator

E.SW: Electronic Switch

H.P.F: High Pass Filter

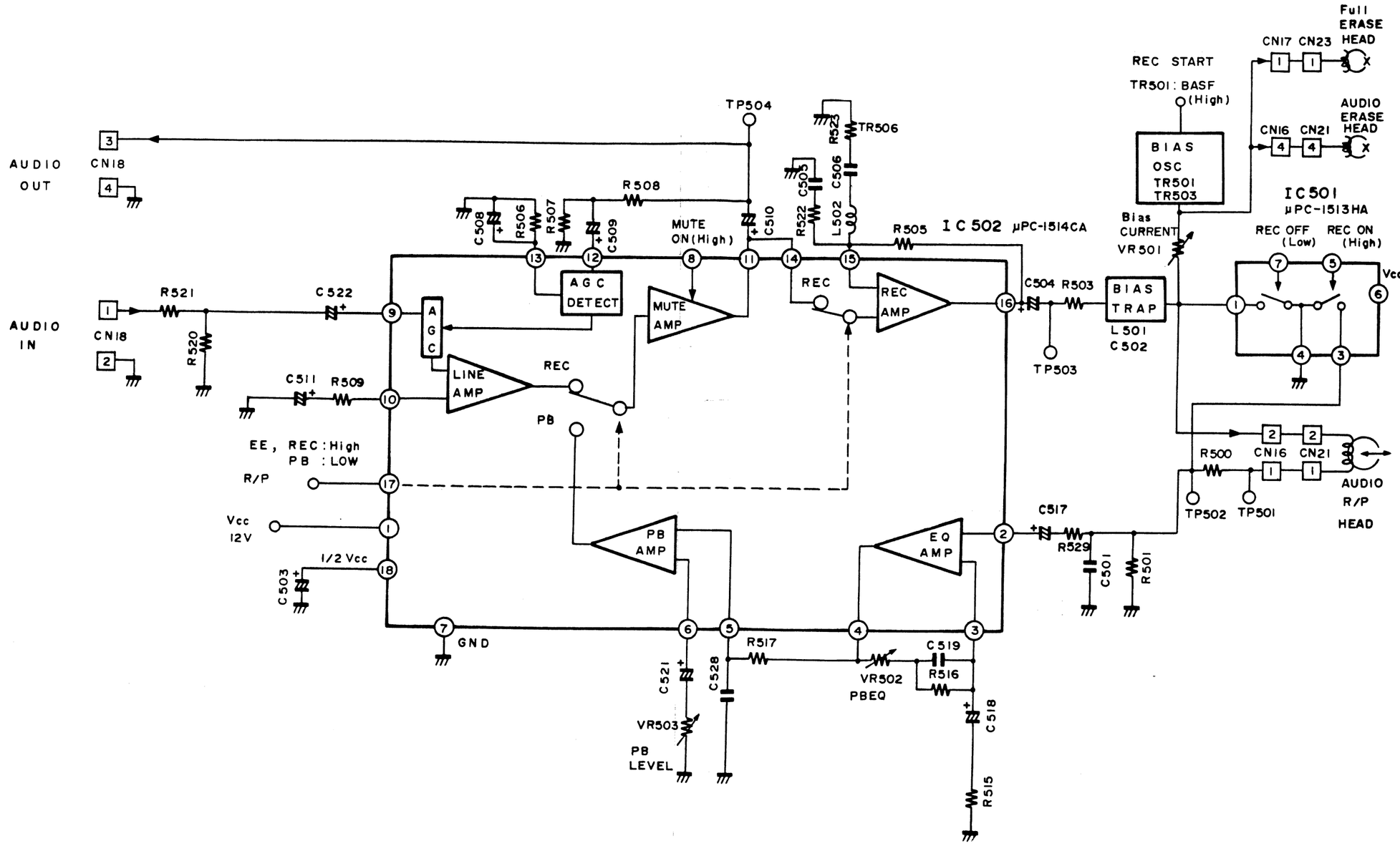
SAWF: SAW Filter

EQ AMP: Equalizer Amplifier

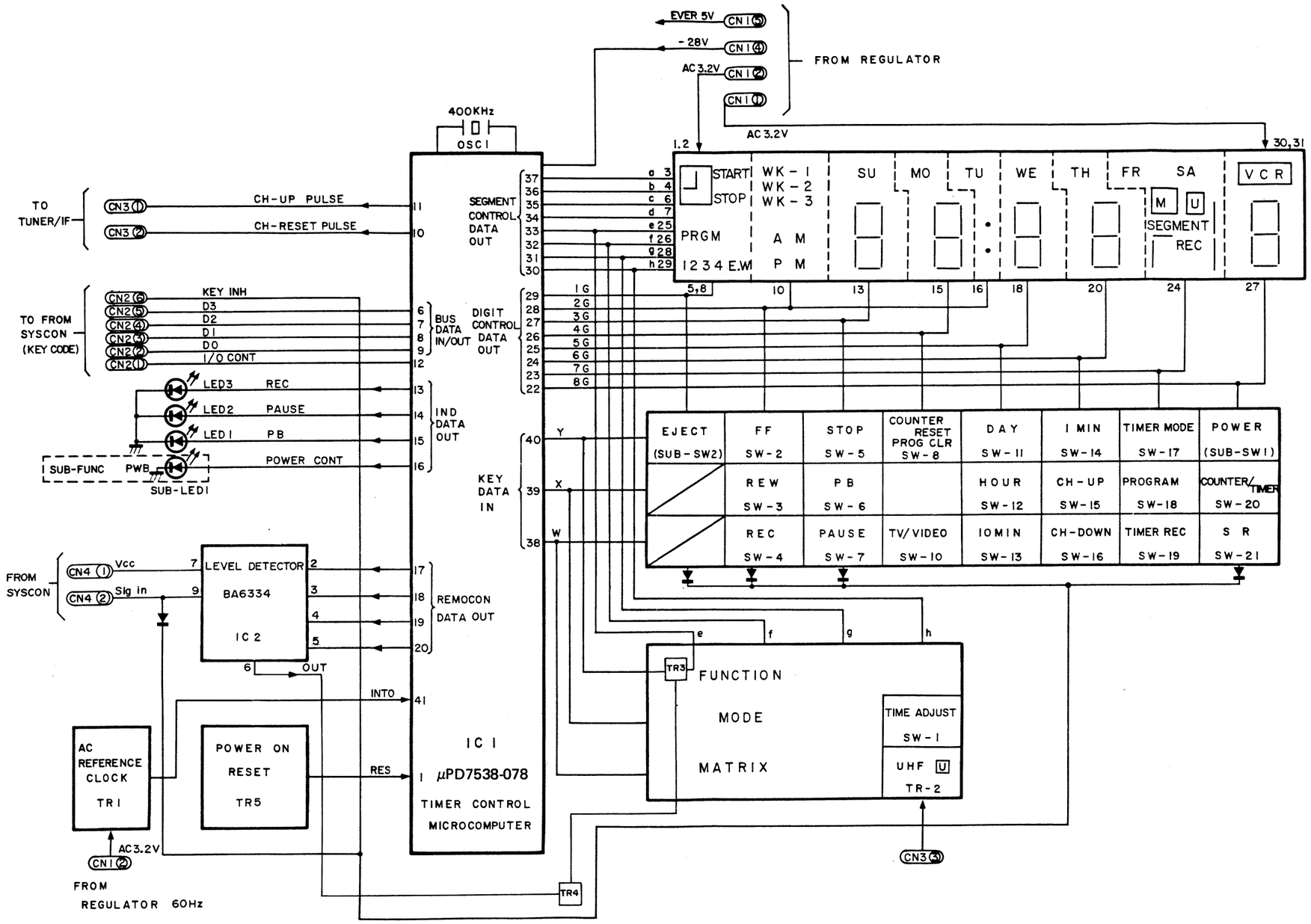
※1

Preset Potentiometer No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
IC2 Pin No.	11	10	9	8	7	6	5	4	3	2	1	24	23	22	21	20

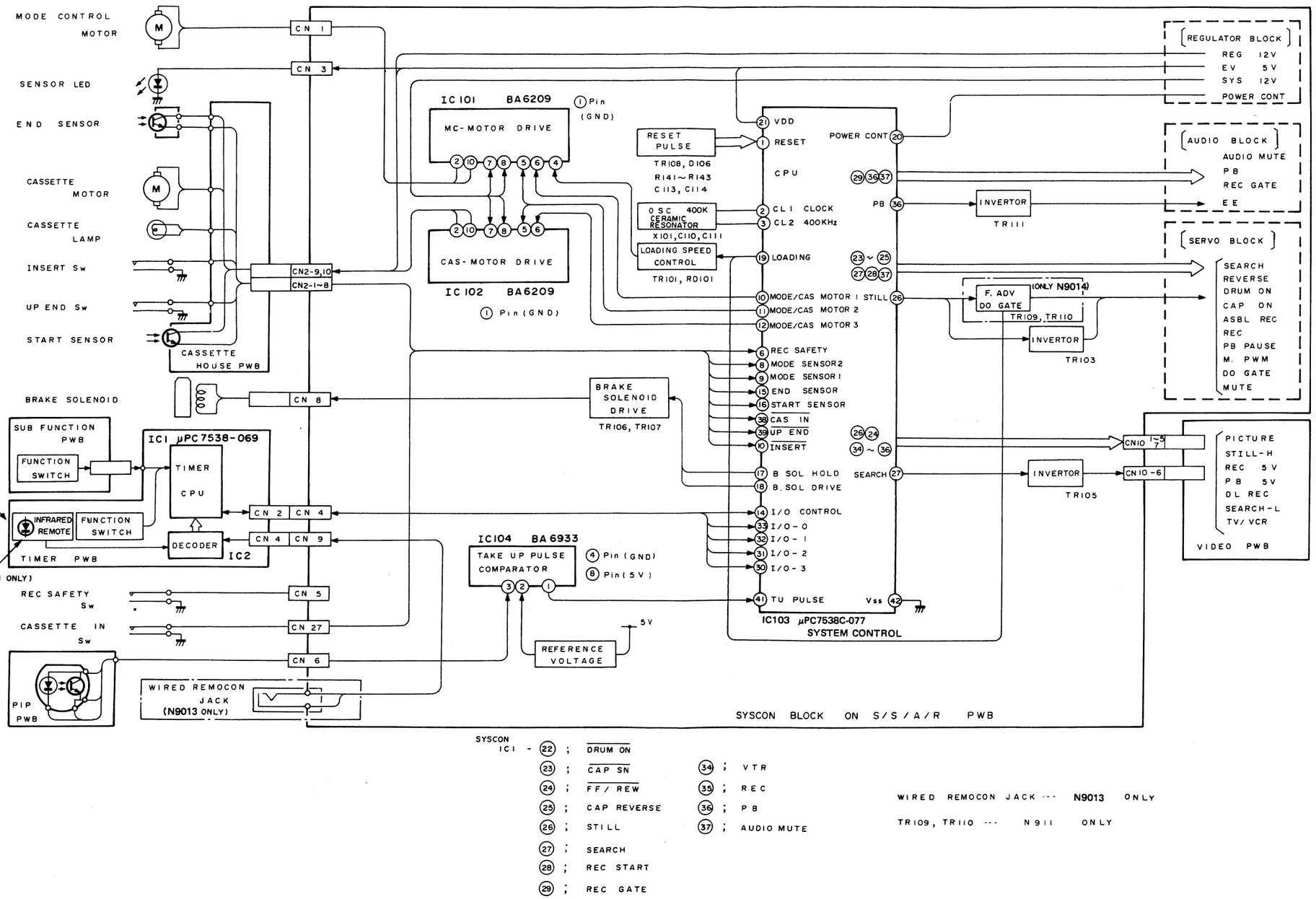
5-1-4. Audio diagram (N9013G/N9014G)



5-1-5. Timer/Function block diagram (N9013G/N9014G)



5-1-6. System control block diagram (N9013G/N9014G)

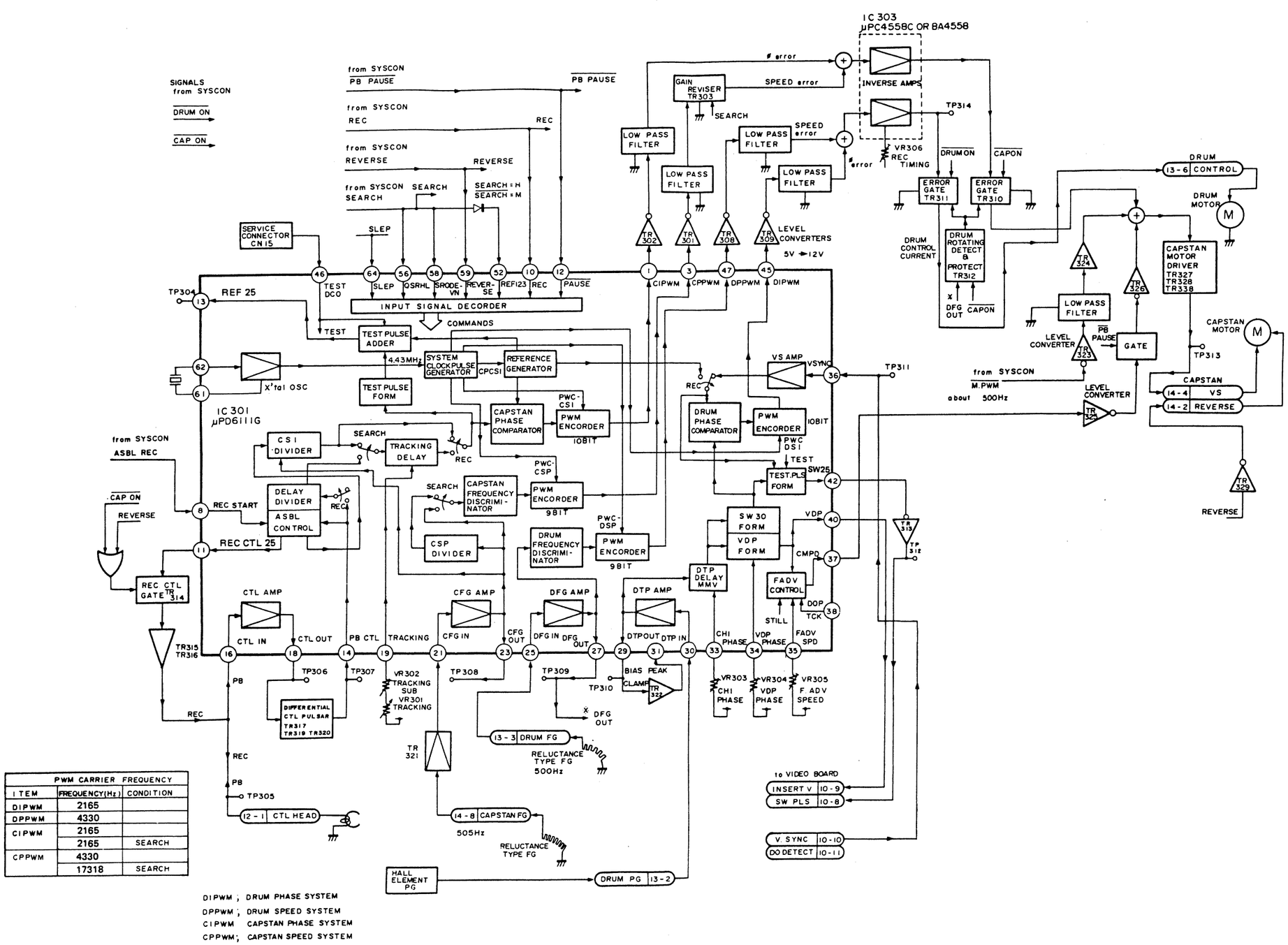


SYSCON IC1 -
- (22) ; DRUM ON
- (23) ; CAP SN
- (24) ; FF/REW
- (25) ; CAP REVERSE
- (26) ; STILL
- (27) ; SEARCH
- (28) ; REC START
- (29) ; REC GATE
- (34) ; VTR
- (35) ; REC
- (36) ; PB
- (37) ; AUDIO MUTE

WIRED REMOCON JACK --- N9013 ONLY

TR109, TR110 --- N911 ONLY

5-1-7 Servo control diagram (N9013G/N9014G)

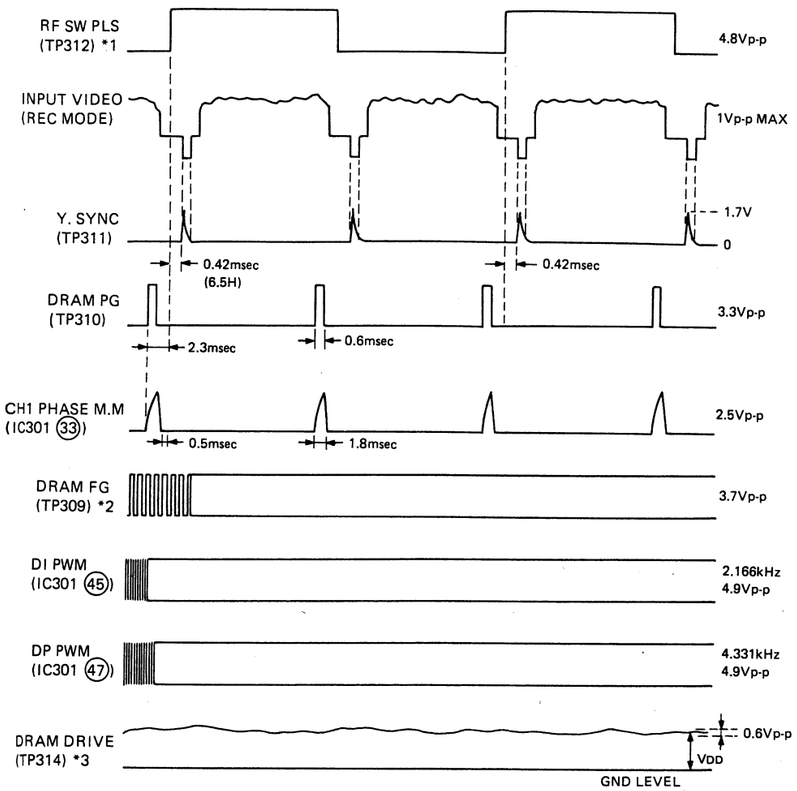


PWM CARRIER FREQUENCY		
ITEM	FREQUENCY(Hz)	CONDITION
DIPWM	2165	
DPPWM	4330	
CIPWM	2165	
	2165	SEARCH
CPPWM	4330	
	17318	SEARCH

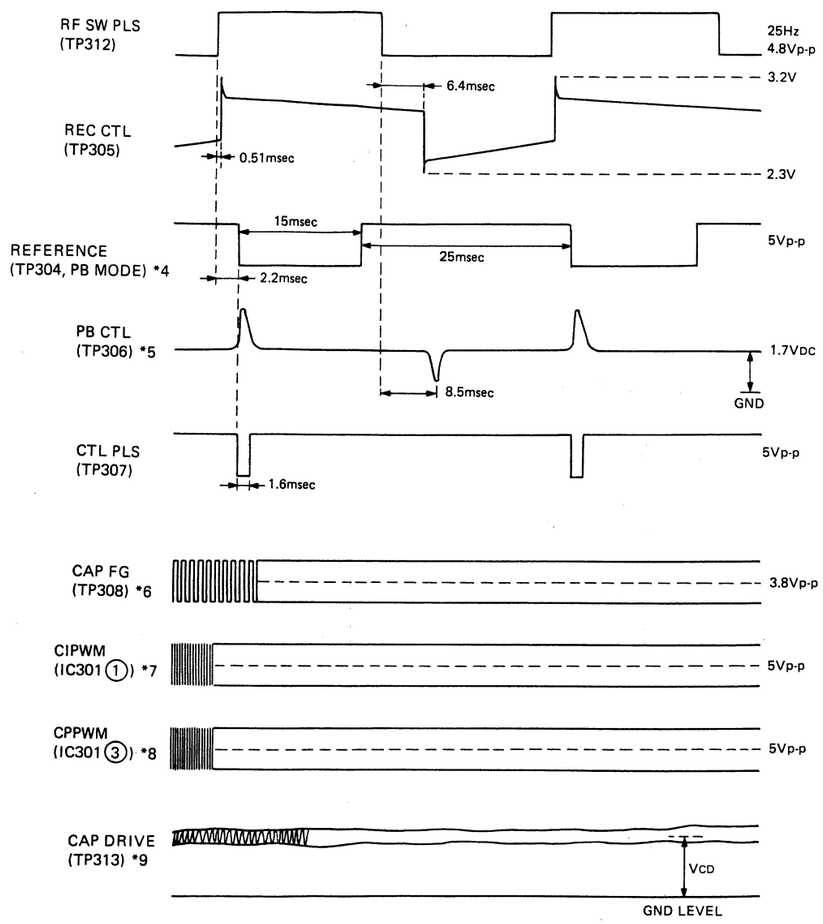
DIPWM ; DRUM PHASE SYSTEM
DPPWM ; DRUM SPEED SYSTEM
CIPWM ; CAPSTAN PHASE SYSTEM
CPPWM ; CAPSTAN SPEED SYSTEM

5-2. TIMING CHARTS

5-2-1. Drum servo timing chart (N9013G/N9014G)



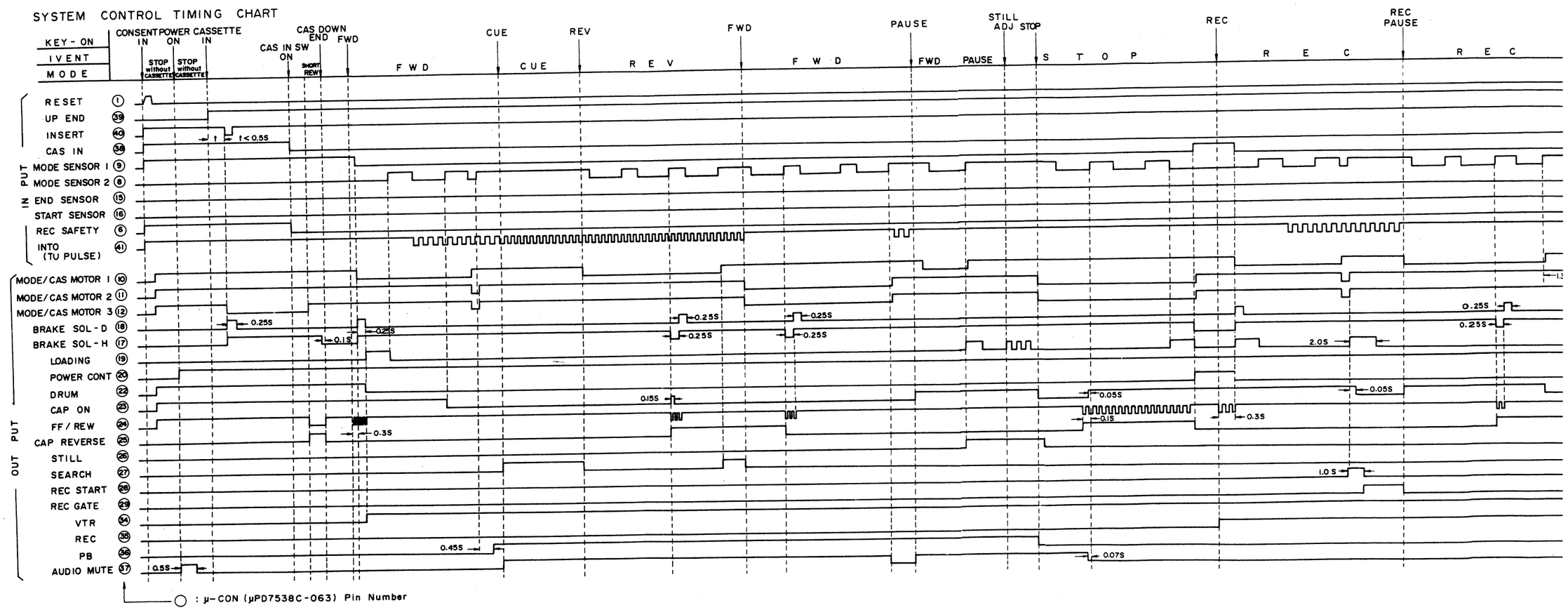
5-2-2. Capstan servo timing chart (N9013G/N9014G)



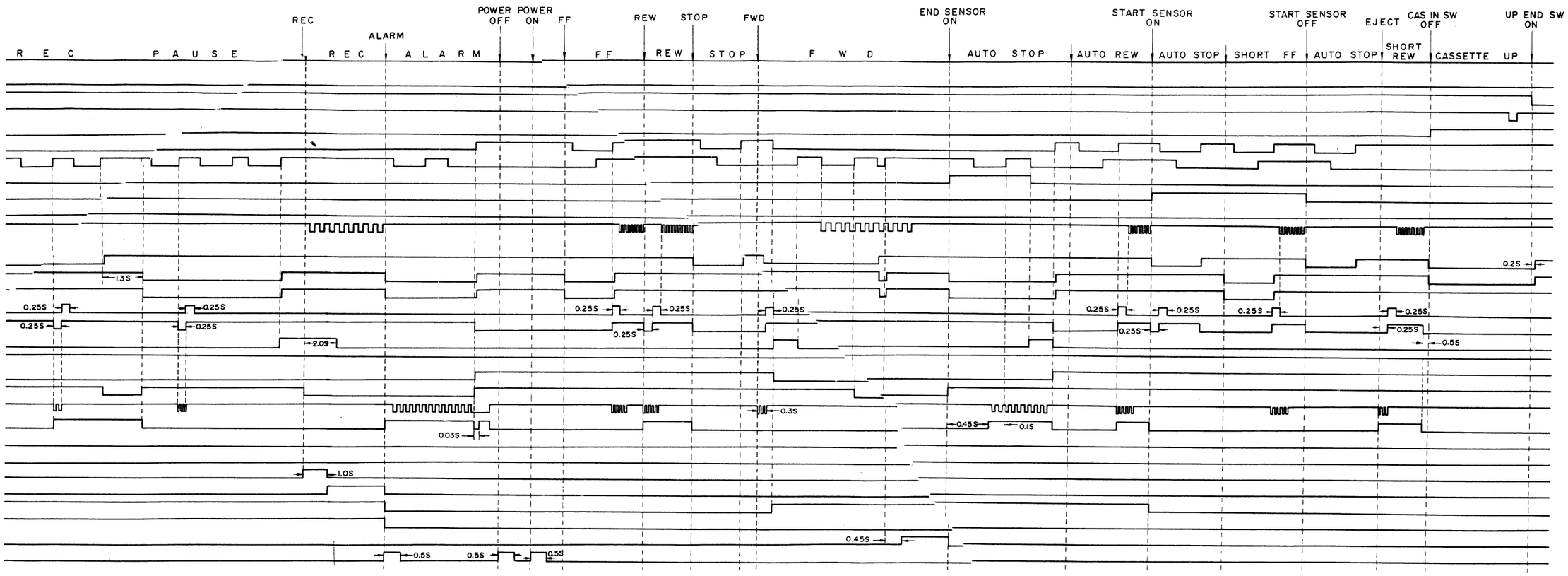
5-2-3. Servo timing chart (N9013G/N9014G)

PRAMETERS \ Mode	NORMAL (REC, PB)	CUE	REVIEW
	SP	SP	SP
*1) RF SWO PLS Freq. (Hz)	25.0	26.0	24.0
*2) DRUM FG Freq. (Hz)	500	515	481
*3) DRUM DRIVE Voltage: (volt DC) VDD	3.9	4.0	3.8
*4) REFERENCE Freq. (Hz)	25.0	26.0	24.0
*5) PB CTL Level: V+ (Volt) V- (Volt)	1.3 1.1	1.9 1.1	1.9 1.1
*6) CAP FG Freq. (Hz)	505	3636	3396
*7) CIPWM Freq. (Hz)	2166	2166	2166
*8) CP PWM Freq. (Hz)	4331	17322	17322
*9) CAP DRIVE DC: VDD (volt DC) Carrier: VC (volt p-p)	3.4 1.0	7.2 0.2	6.5 0.2

5-2-5. System control timing chart (N9013G/N9014G)

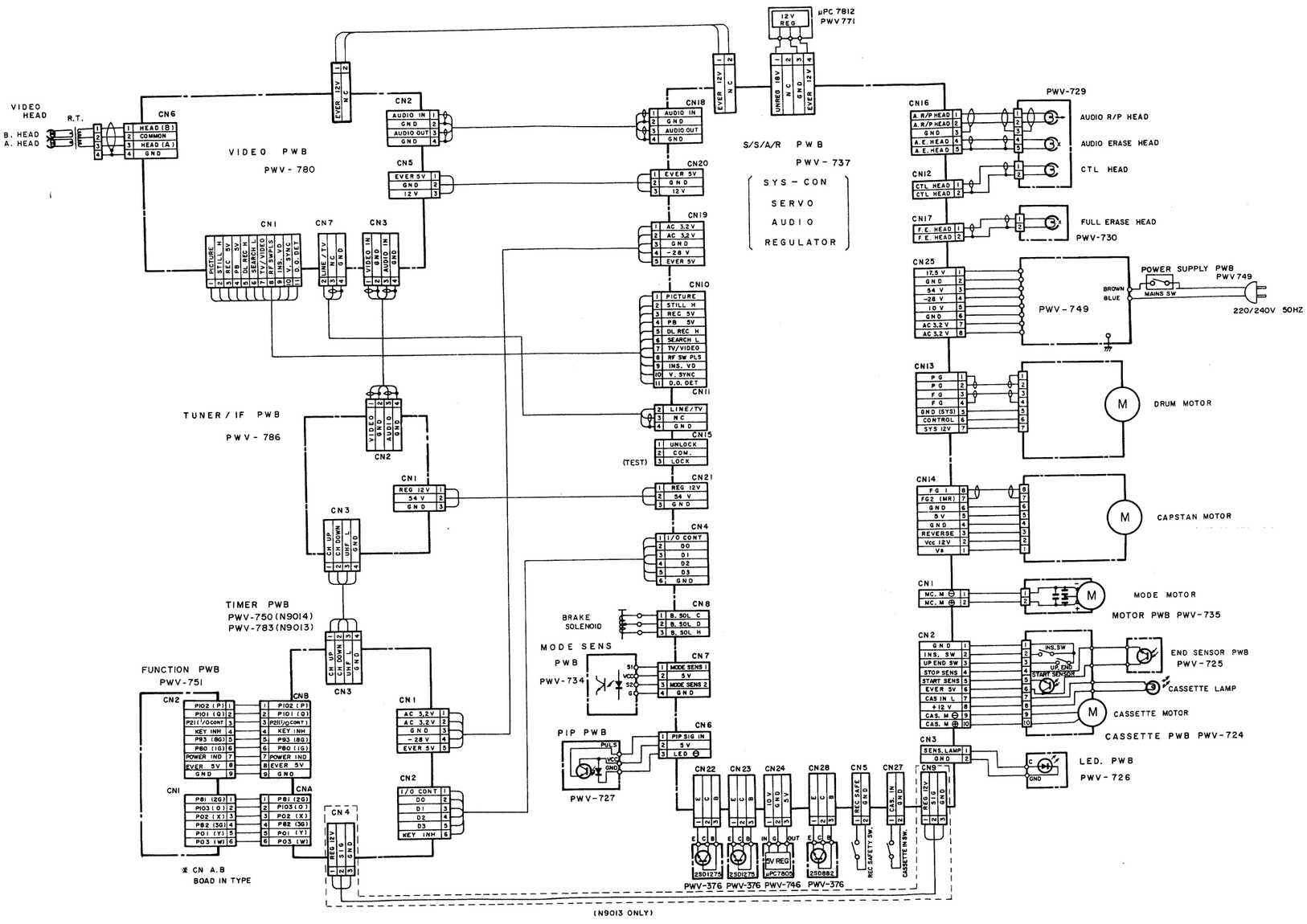


H | I | J | K | L | M | N | O

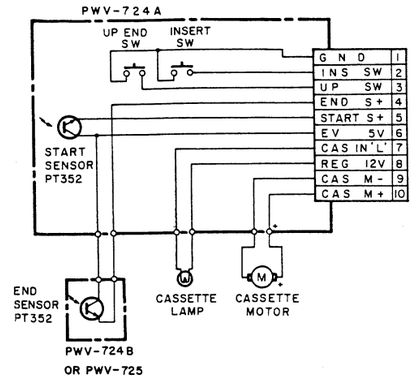

REC
POWER OFF
POWER ON
FF
REW
STOP
FWD
END SENSOR ON
START SENSOR ON
START SENSOR OFF
EJECT
CAS IN SW OFF
UP END SW ON
ALARM
SHORT REW
R E C
P A U S E
R E C
A L A R M
F F
R E W
S T O P
F W D
AUTO STOP
AUTO REW
AUTO STOP
SHORT FF
AUTO STOP
CASSETTE UP
0.25S
1.3S
2.0S
0.03S
0.3S
0.45S
0.1S
1.0S
0.5S

5-3. SCHEMATIC AND CIRCUITBOARD DIAGRAMS

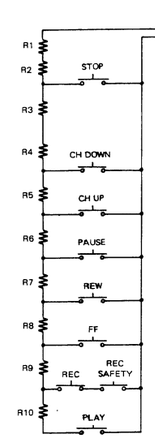
5-3-1. Frame wiring (N9013G/N9014G)



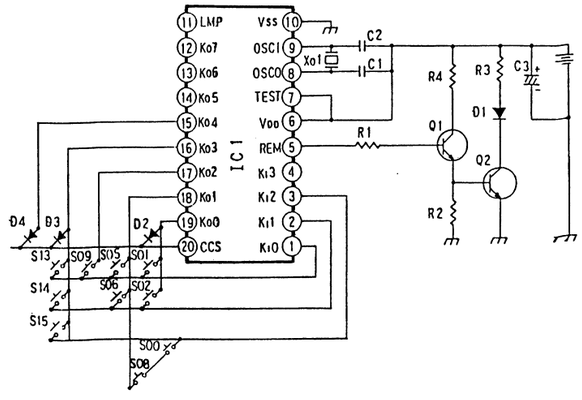
5-3-2. Cassette circuit (N9013G/N9014G)



5-3-3-1. Remote control circuit (N9013G)



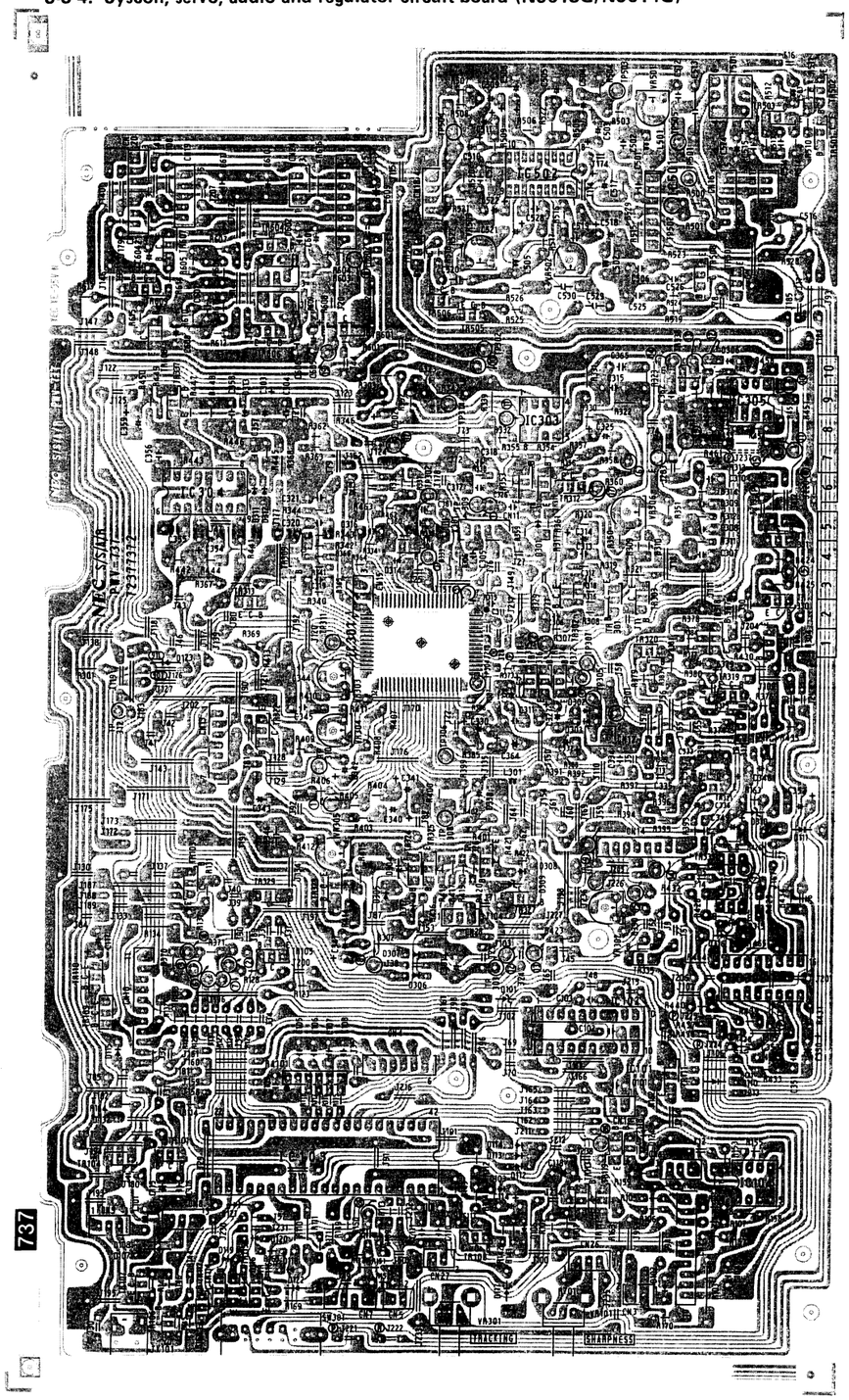
5-3-3-2. Remote control circuit (N9014G)



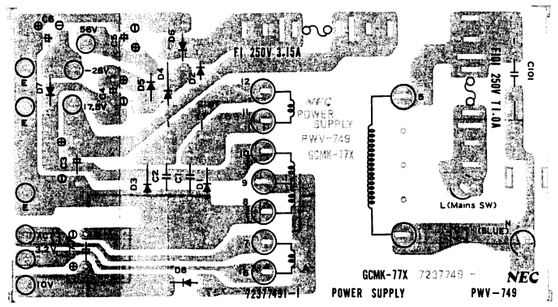
A B C D E F G

1 2 3 4 5

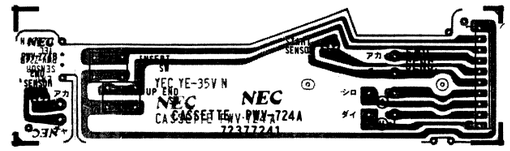
5-3-4. Syscon, servo, audio and regulator circuit board (N9013G/N9014G)



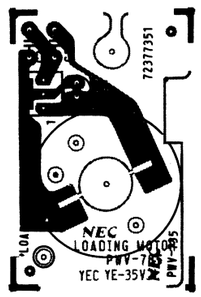
5-3-5. Power supply circuit board (N9013G/N9014G)



5-3-6. Cassette circuit board (N9013G/N9014G)



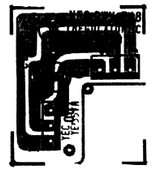
5-3-7. Loading motor circuit board (N9013G/N9014G)



5-3-8.

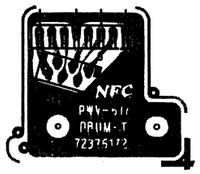
5-3-9. Mode senser circuit board (N9013G/N9014G)

5-3-10. Regulator IC circuit board (N9013G/N9014G)

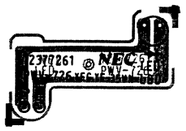


5-3-11. TU senser circuit board (N9013G/N9014G)

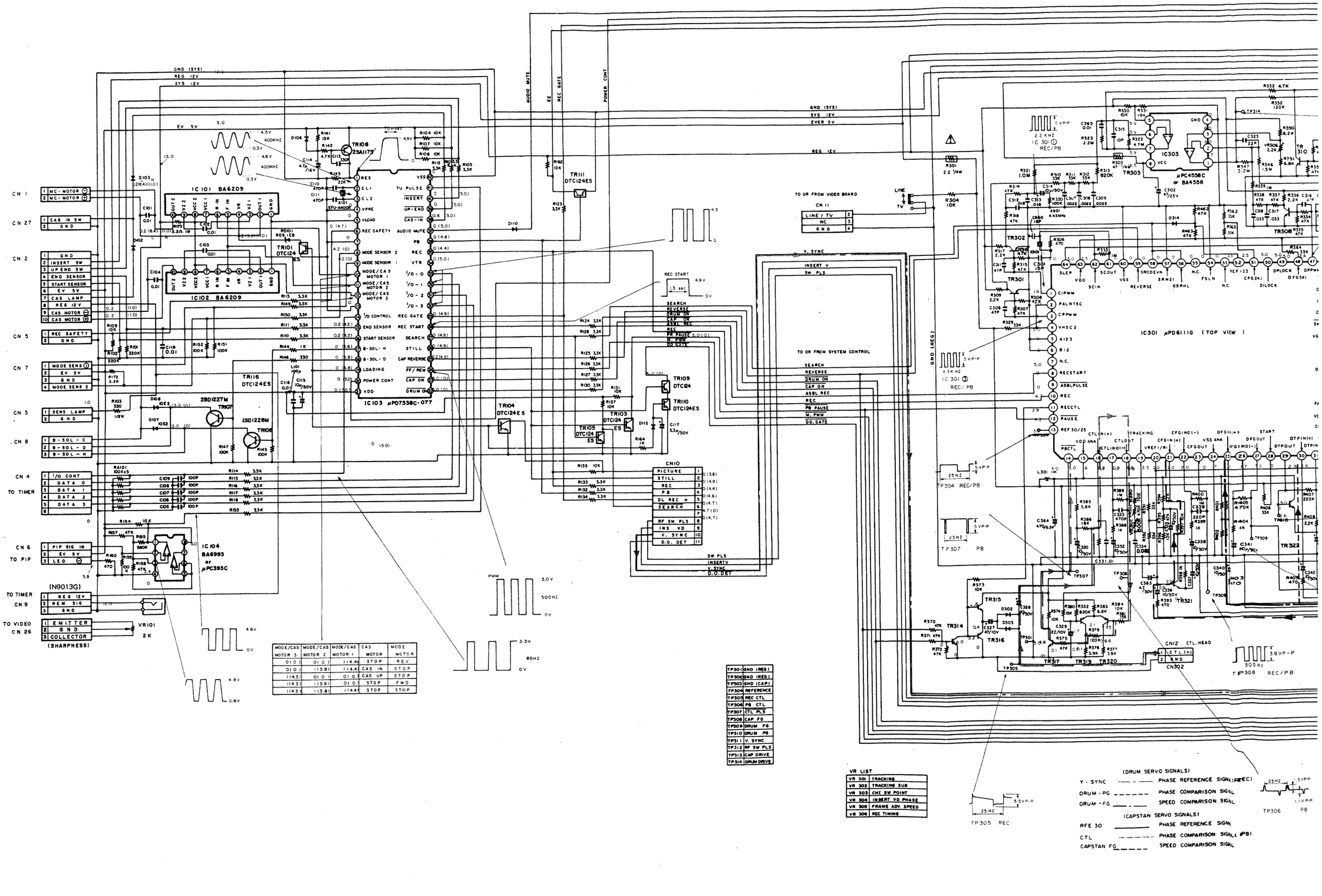
5-3-12. Drum junction circuit board (N9013G/N9014G)



5-3-13. LED circuit board (N9013G/N9014G)



5-3-14. Syscon, servo, audio and regulator circuit (N9013G/N9014G)



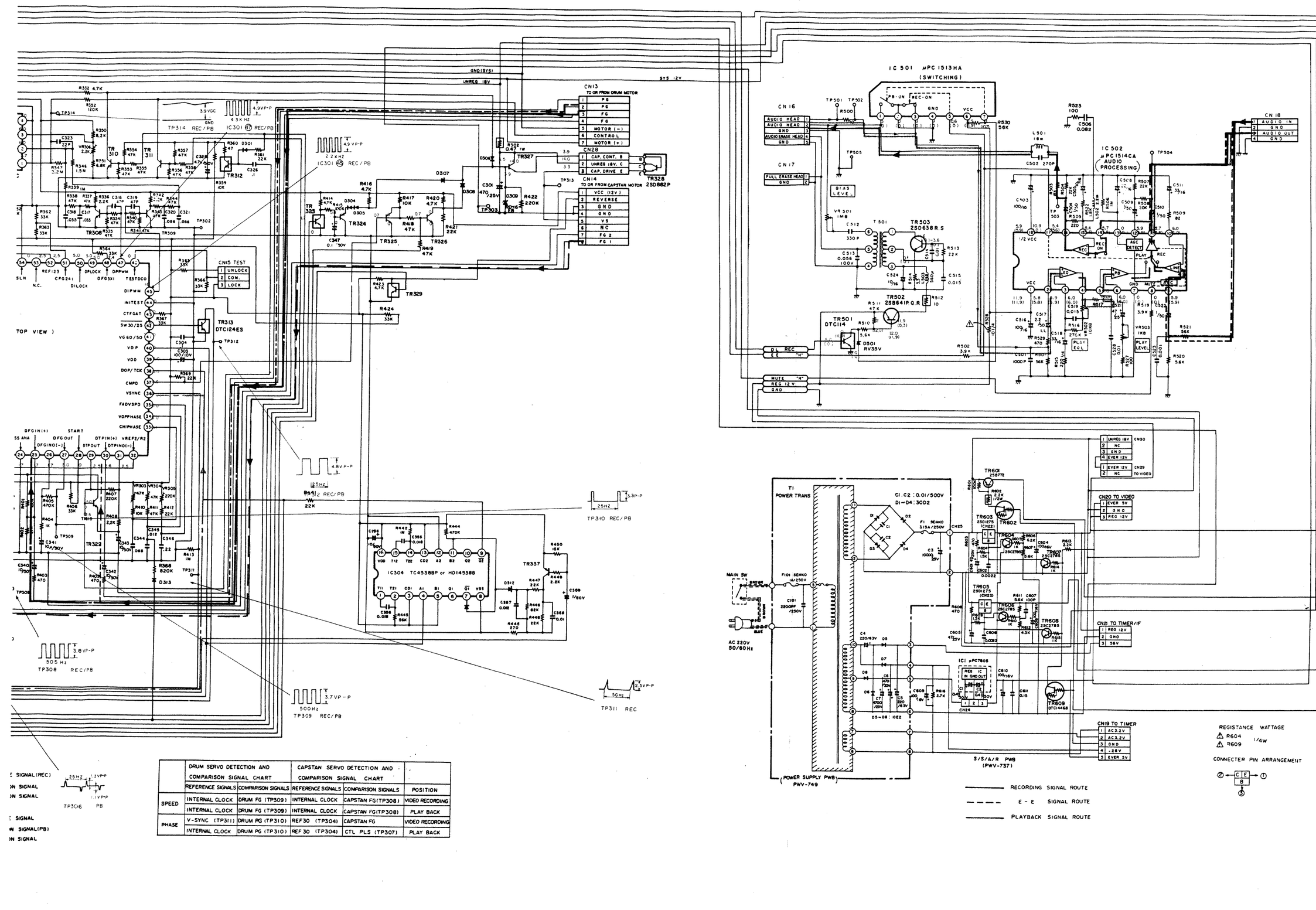
MODE/CAS MOTOR 3	MODE/CAS MOTOR 2	MODE/CAS MOTOR 1	CAS MOTOR	MODE MOTOR
0(0)	0(0)	1(4.4)	STOP	REV
0(0)	1(3.8)	1(4.4)	CAS IN	STOP
1(4.3)	0(0)	0(0)	CAS UP	STOP
1(4.3)	1(3.8)	0(0)	STOP	FWD
1(4.3)	1(3.8)	1(4.4)	STOP	STOP

TP301	GND (REG)
TP302	GND (REG)
TP303	GND (CAP)
TP304	REFERENCE
TP305	REC CTL
TP306	PB CTL
TP307	CTL PLS
TP308	CAP FG
TP309	DRUM FG
TP310	DRUM PG
TP311	V. SYNC
TP312	RF SW PLS
TP313	CAP DRIVE
TP314	DRUM DRIVE

VR LIST	
VR 301	TRACKING
VR 302	TRACKING SUB
VR 303	CHI SW POINT
VR 304	INSERT VD PHASE
VR 305	FRAME ADV. SPEED
VR 306	REC TIMING

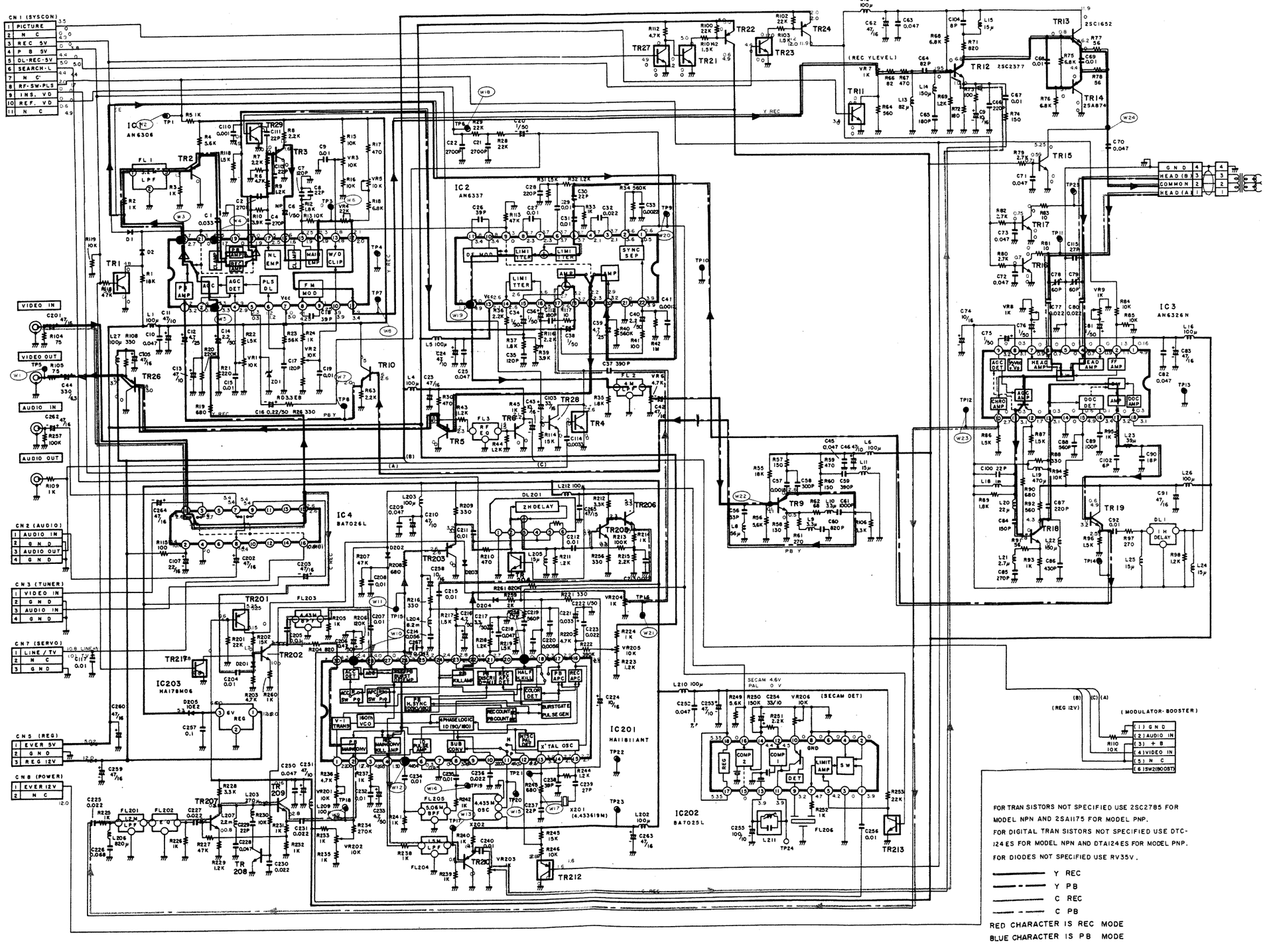
(DRUM SERVO SIGNALS)
- Y - SYNC ——— PHASE REFERENCE SIGNAL (REC)
- DRUM - PG _ _ _ _ _ PHASE COMPARISON SIGNAL
- DRUM - FG — — — SPEED COMPARISON SIGNAL

(CAPSTAN SERVO SIGNALS)
- RFE 30 ——— PHASE REFERENCE SIGNAL
- CTL ——— PHASE COMPARISON SIGNAL (PB)
- CAPSTAN FG _ _ _ _ _ SPEED COMPARISON SIGNAL

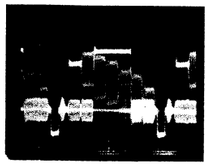
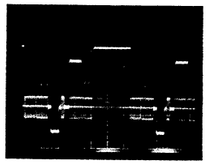
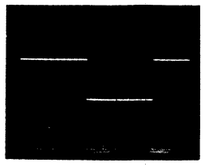
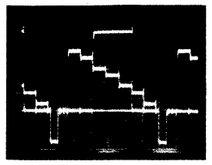
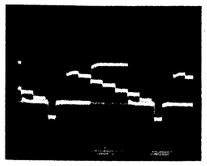
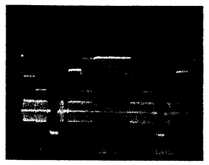
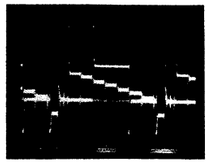
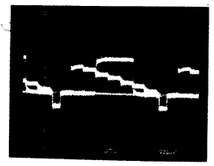
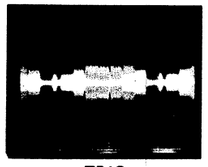
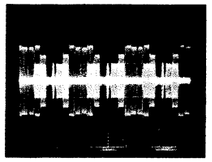
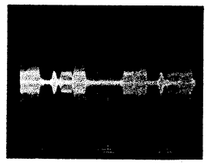
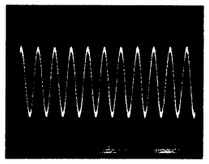
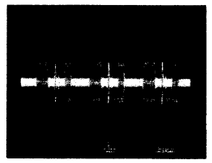
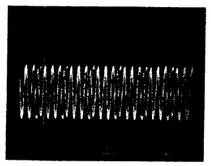
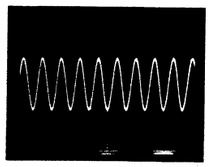
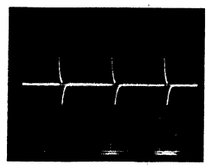
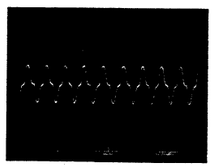
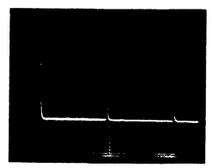
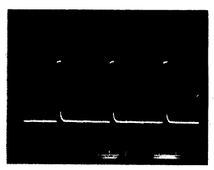
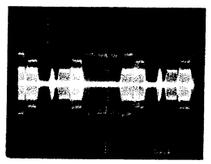
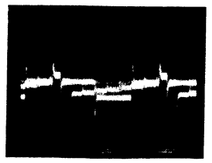
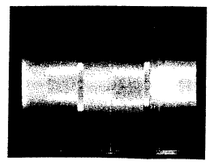
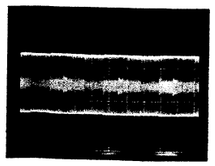
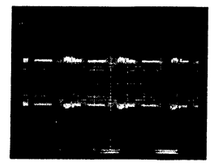
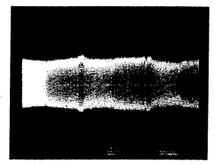


	DRUM SERVO DETECTION AND COMPARISON SIGNAL CHART		CAPSTAN SERVO DETECTION AND COMPARISON SIGNAL CHART		
	REFERENCE SIGNALS	COMPARISON SIGNALS	REFERENCE SIGNALS	COMPARISON SIGNALS	POSITION
SPEED	INTERNAL CLOCK	DRUM FG (TP309)	INTERNAL CLOCK	CAPSTAN FG(TP308)	VIDEO RECORDING
	INTERNAL CLOCK	DRUM FG (TP309)	INTERNAL CLOCK	CAPSTAN FG(TP308)	PLAY BACK
PHASE	V-SYNC (TP311)	DRUM PG (TP310)	REF30 (TP304)	CAPSTAN FG	VIDEO RECORDING
	INTERNAL CLOCK	DRUM PG (TP310)	REF30 (TP304)	CTL PLS (TP307)	PLAY BACK

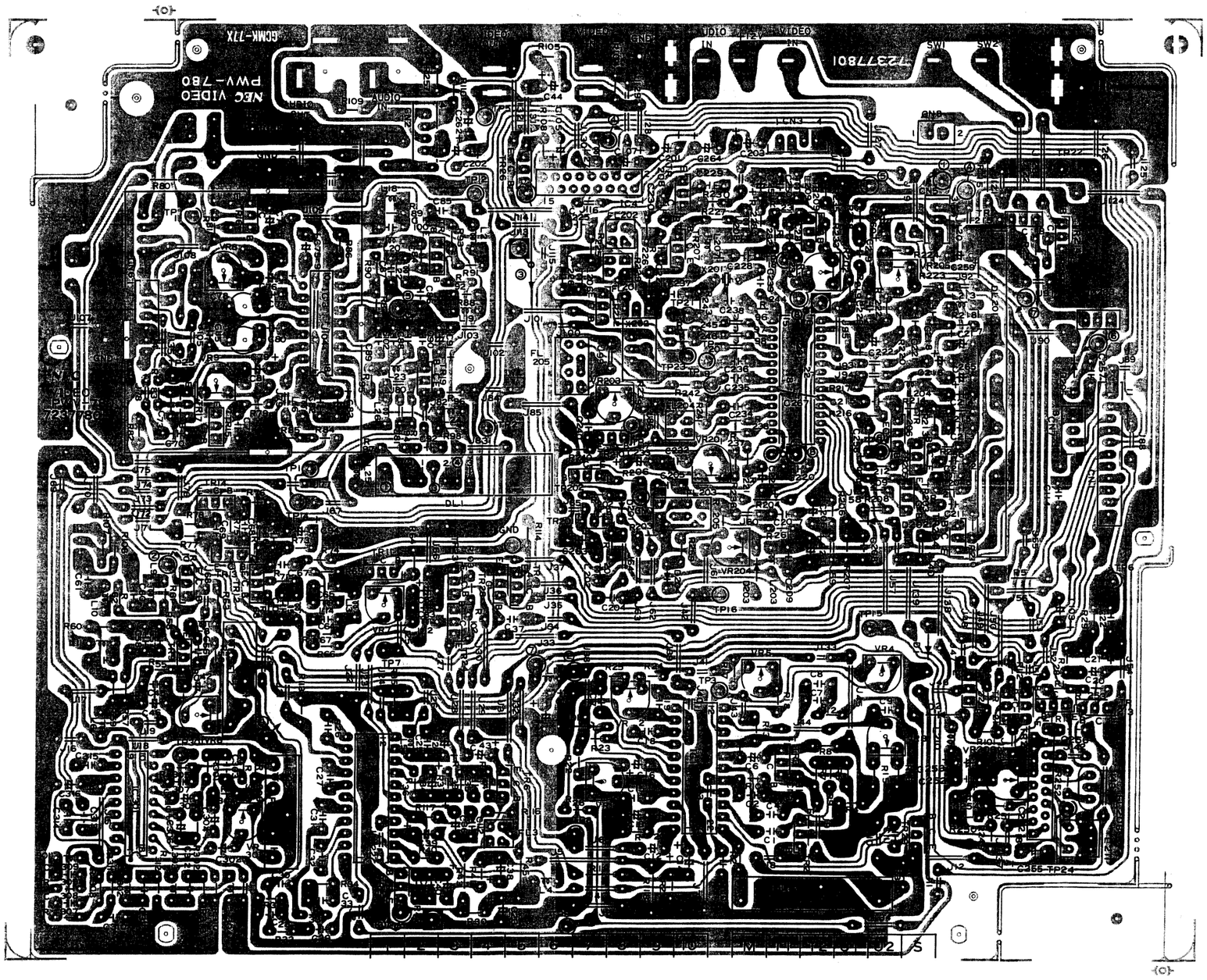
5-3-15. Video circuit (N9013G/N9014G)



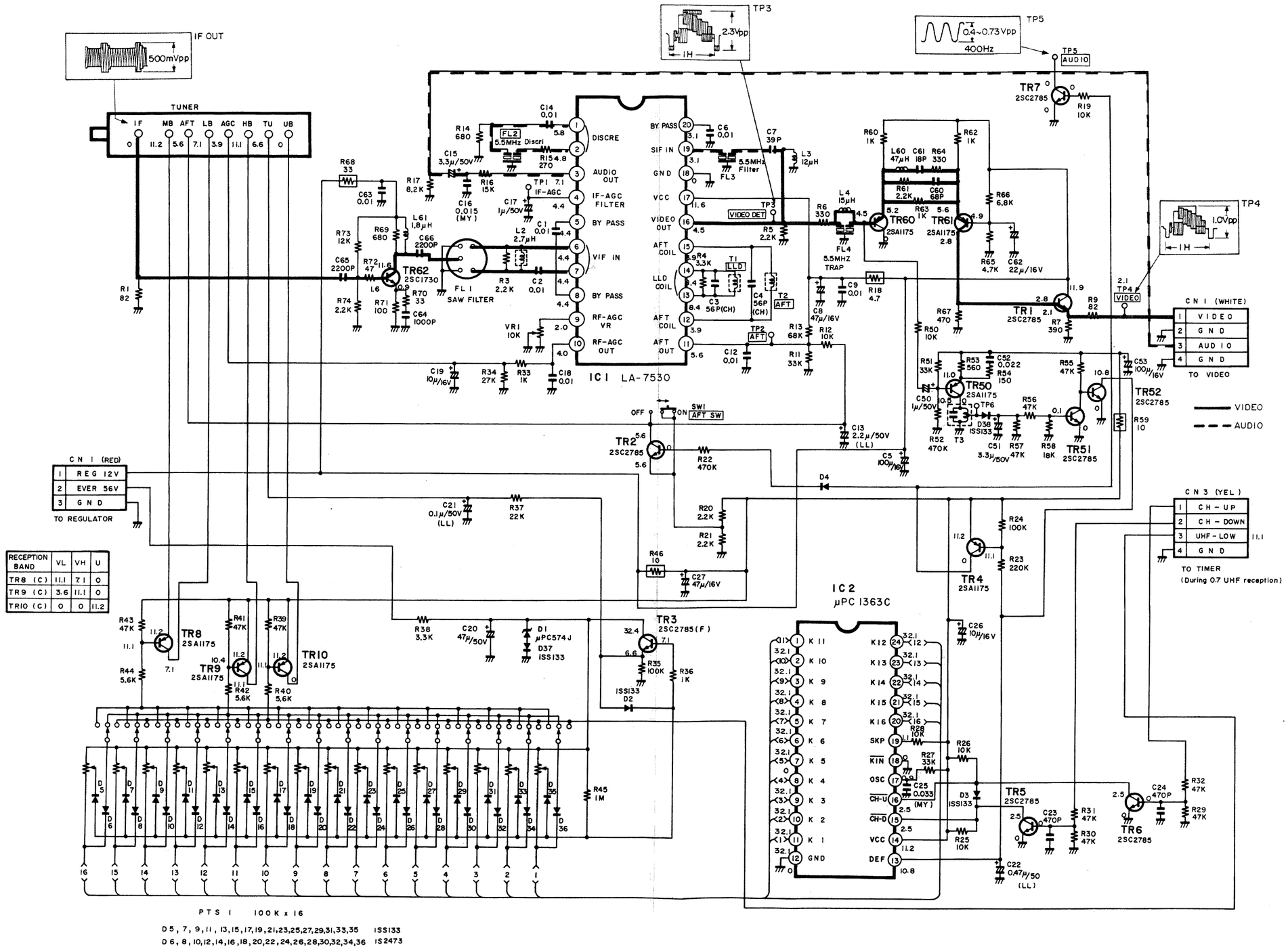
5-3-16. Main waveforms of video circuit (N9013G/N9014G)

W1		W2	W3	W4	W5	W6
 TP5 PB 1Vp-p Renge 0.2V, 10μsec.	 TP5 REC 1Vp-p Range 0.2V, 10μsec.	 TP1 RF SW PLS 5Vp-p Range 2V, 5μsec.	 REC IC1 22 pin 0.33Vp-p Range 50mV, 10μsec.	 IC1 20 pin PB Y Signal 0.65Vp-p Range 0.2V, 10μsec.	 IC1 3 pin REC 0.23Vp-p Range 50mV, 10μsec.	 TP3 REC 0.6Vp-p Range 0.2V, 10μsec.
W7	**W8**	**W9**	**W10**	**W11**	**W12**	**W13**
 TP8PB 0.3Vp-p Range 0.1V, 10μsec.	TP7 REC 0.8Vp-p Range 0.2V, 10μsec	 TP18 PB COLOR signal 625kHz 100mVp-p Range 50mV, 10μsec.	 IC201 28 pin REC COLOR signal 0.2Vp-p Range 50mV, 20μsec.	 TP15 PB COLOR signal 4.43MHz, 0.55Vp-p Range 0.2V, 10μsec.	 IC201 5 pin 0.2Vp-p Range 50mV, 0.2μsec.	 TP17 REC COLOR 0.25Vp-p Range 50mV, 20μsec.
W14	**W15**	**W16**	**W17**	**W18**	**W19**	**W20**
 TP19 SUS CONV OUT 0.3Vp-p Range 0.2V, 0.15μsec.	 TP20 X'TAL OSC 0.3Vp-p Range 0.1V, 0.2μsec.	 IC201 19 pin 2.6Vp-p Range 1V, 20msec.	 TP21 PB 4.43VCO 0.1Vp-p Range 0.5V, 0.2μsec.	 TP6 REF, VD 1.7Vp-p Range 0.5V, 5msec.	IC 2 12 pin PB DEM OUT 0.9Vp-p Range 0.2V, 10μsec.	 TP9 REC 3.6Vp-p Range 1V, 20μsec.
W21	**W22**	**W23**	**W24**	**W25**	**W26**	
 TP16 PB COLOR 4.43 0.4Vp-p Range 0.1V, 10μsec.	 TR9 Base PB Y signal 150mVp-p Range 50mV, 10μsec.	 TP12 PB FM signal 0.3V Range 0.1V, 5msec.	 TR15 COLECTOR REC 3.6Vp-p Range 1V, 10μsec.	 TP11 REC 150mVp-p Range 50mV, 10μsec.	 TP14 PB FM signal 0.6Vp-p Range 0.2V, 5msec.	

5-3-17. Video circuit board (N9013G/N9014G)

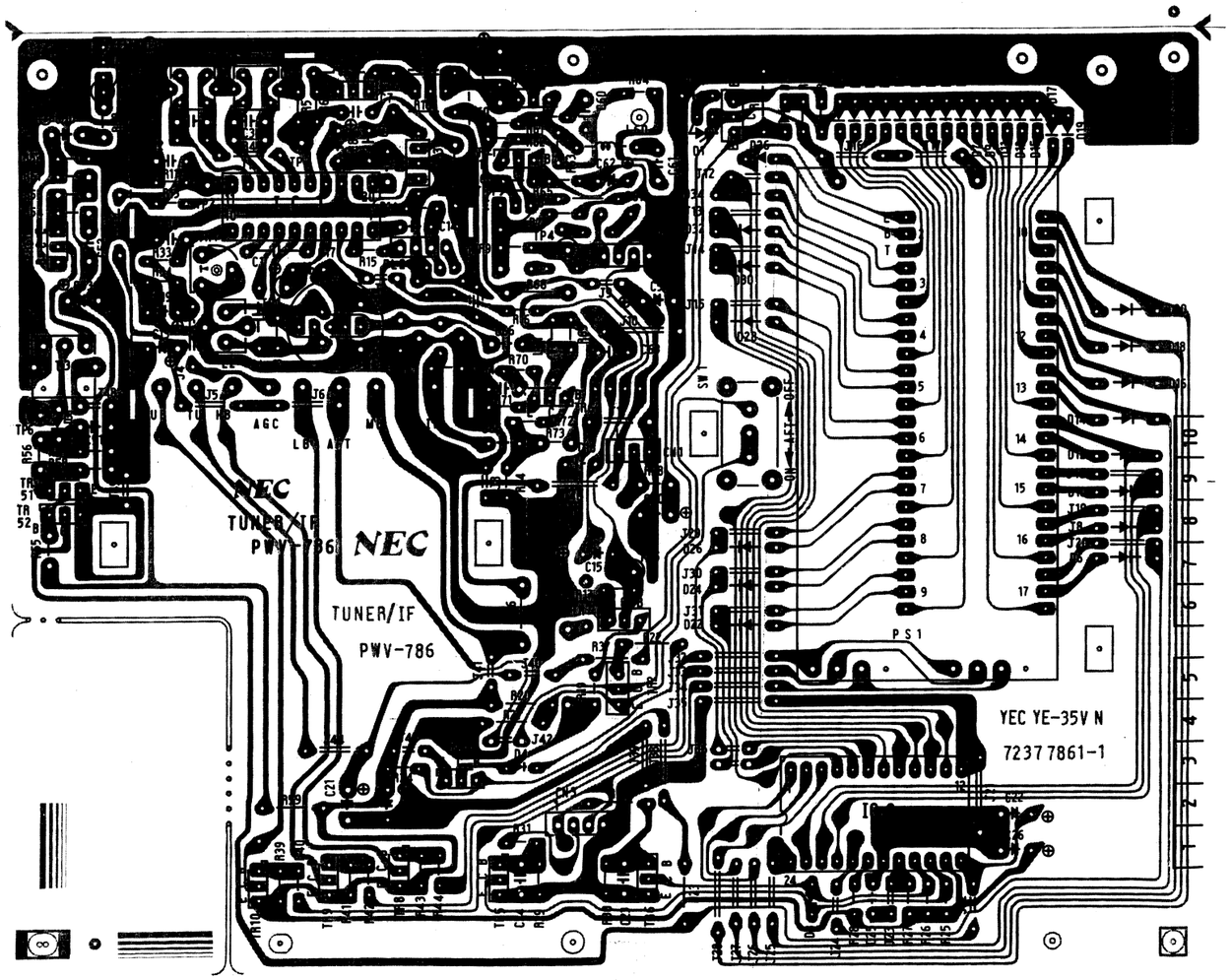


5-3-18. Tuner IF circuit (N9013G/N9014G)

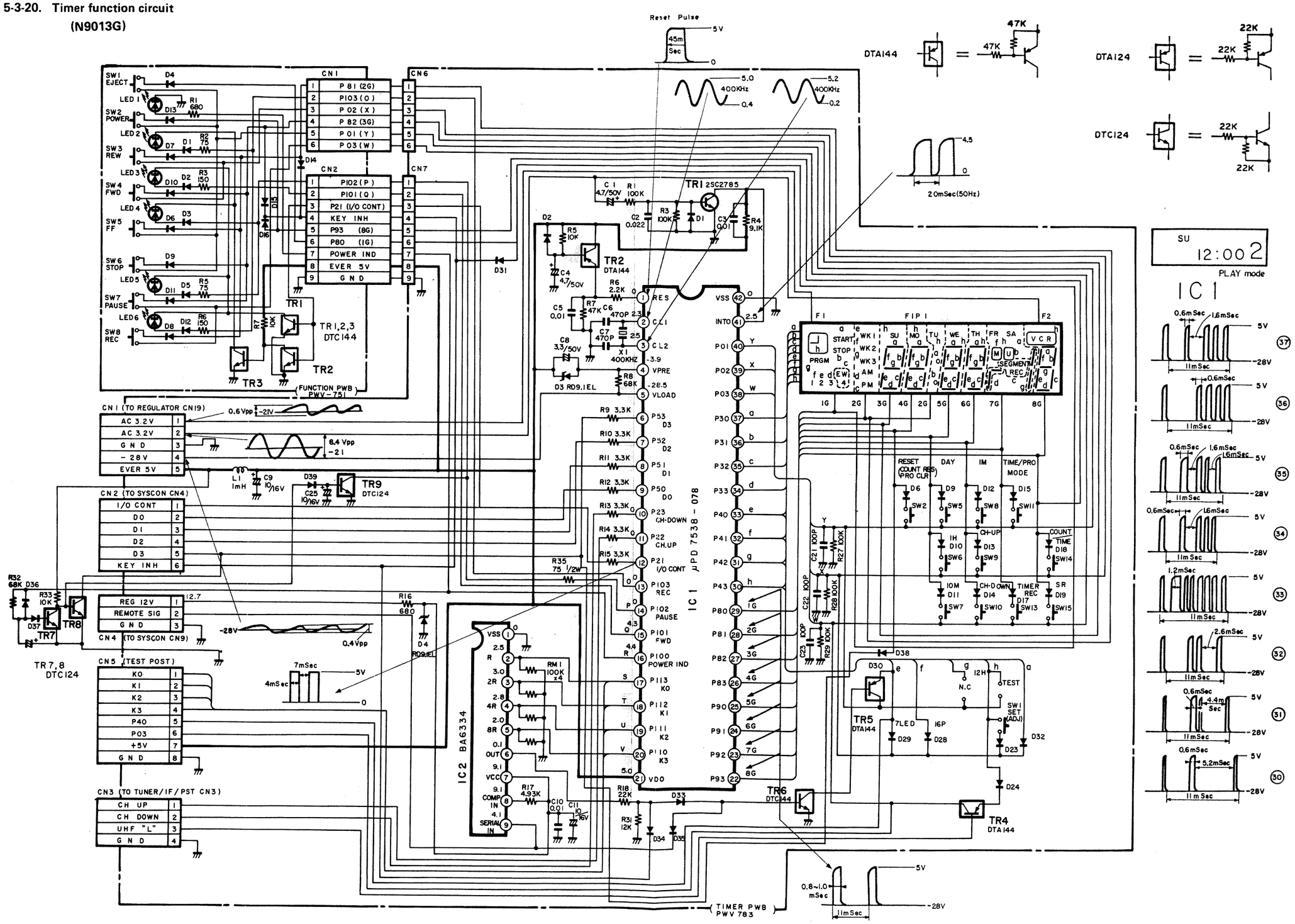


RECEPTION BAND	VL	VH	U
TR8 (C)	11.1	7.1	0
TR9 (C)	3.6	11.1	0
TR10 (C)	0	0	11.2

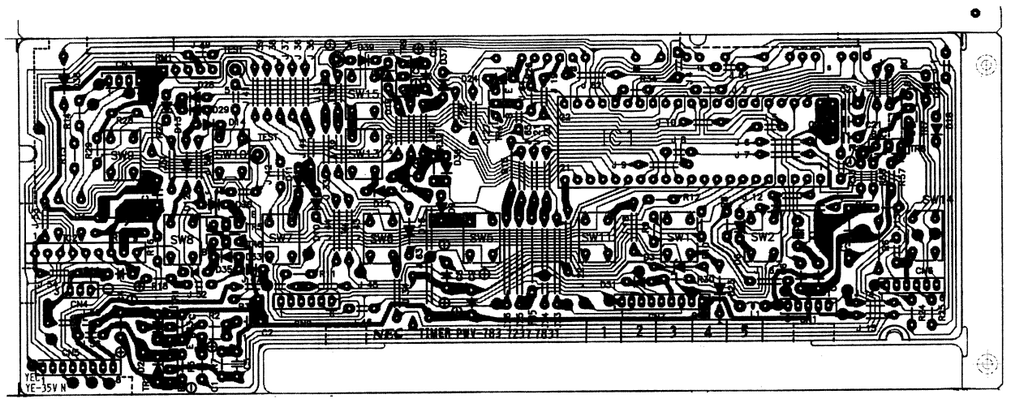
5-3-19. Tuner IF circit board (N9013G/N9014G)

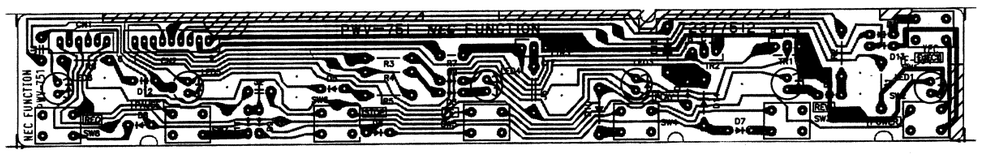


5-3-20. Timer function circuit (N9013G)

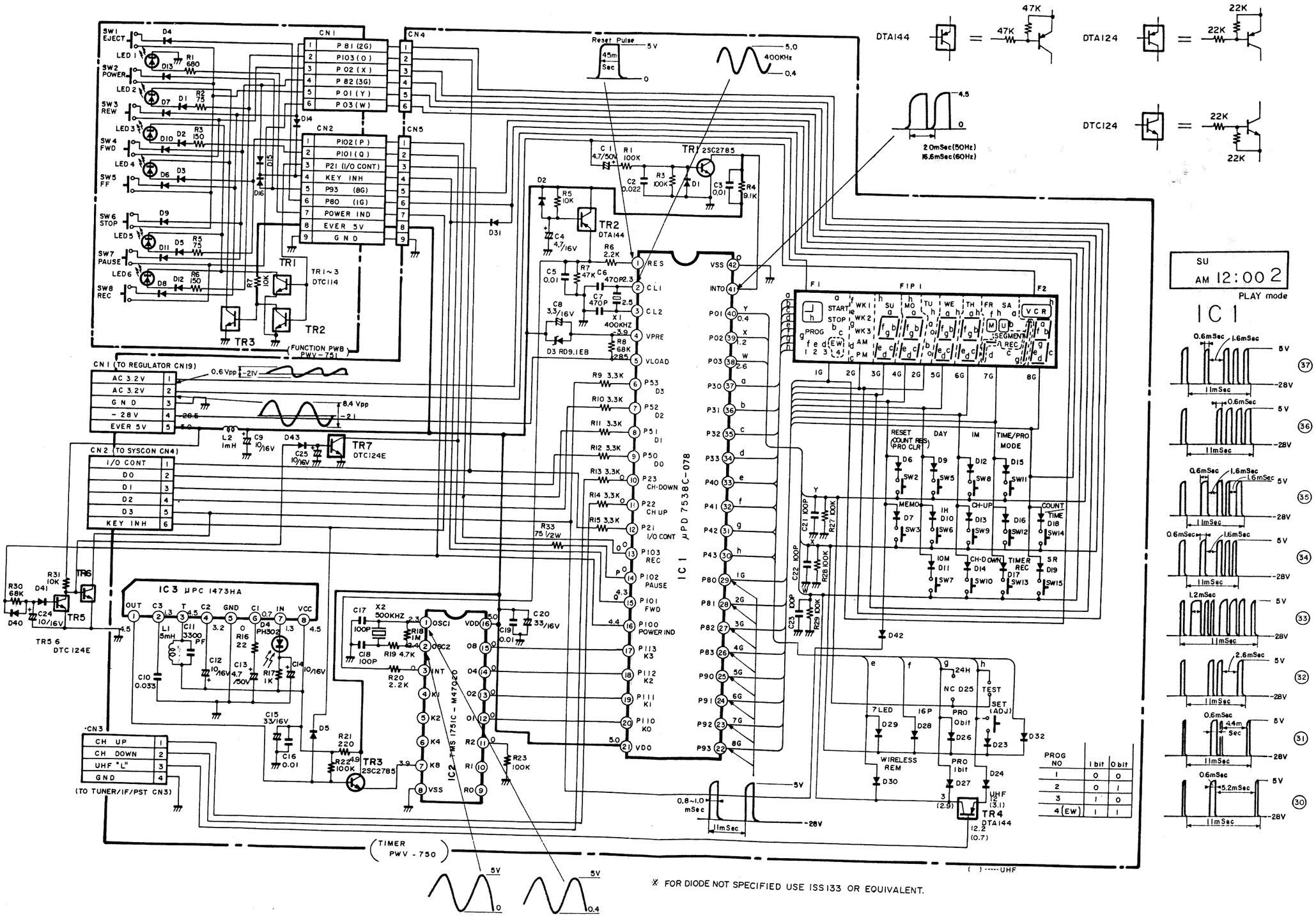


5-3-21. Timer and function circuit boards (N9013G)

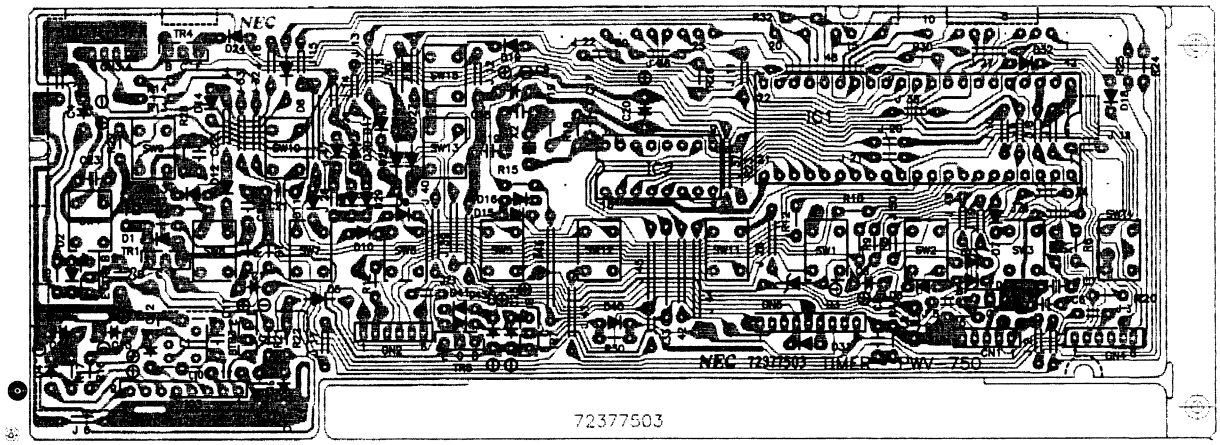


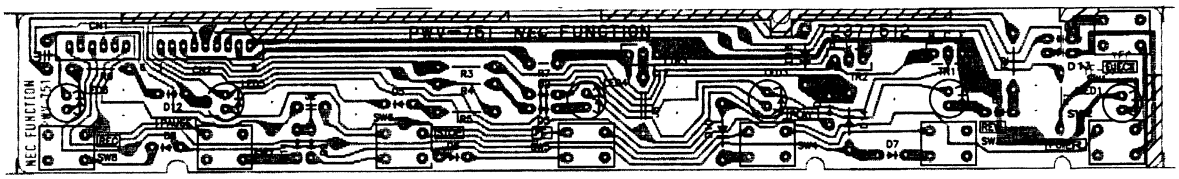


5-3-22. Timer function circuit (N9013G)



5-3-23. Timer and function circuit boards **(N9013G)**

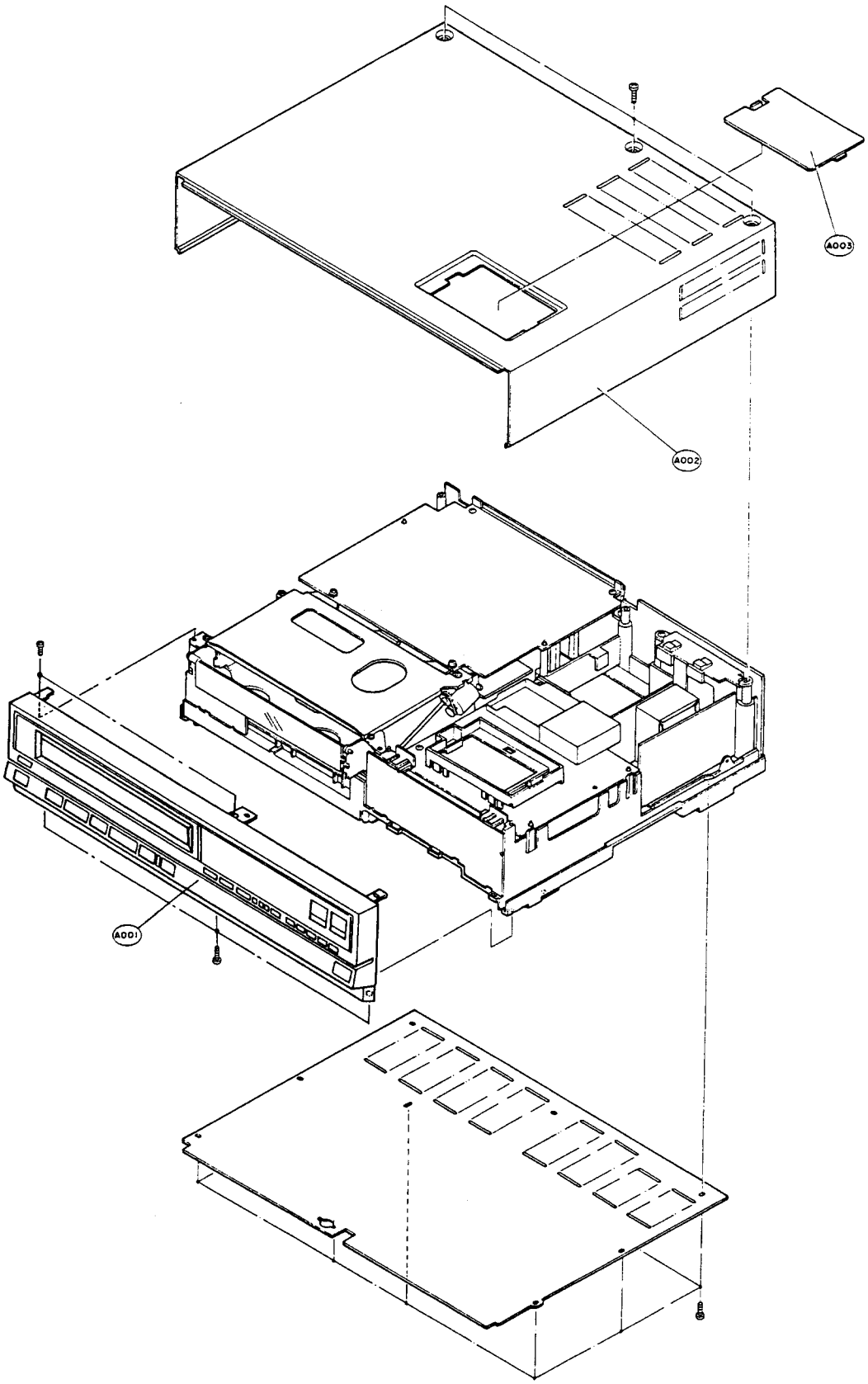




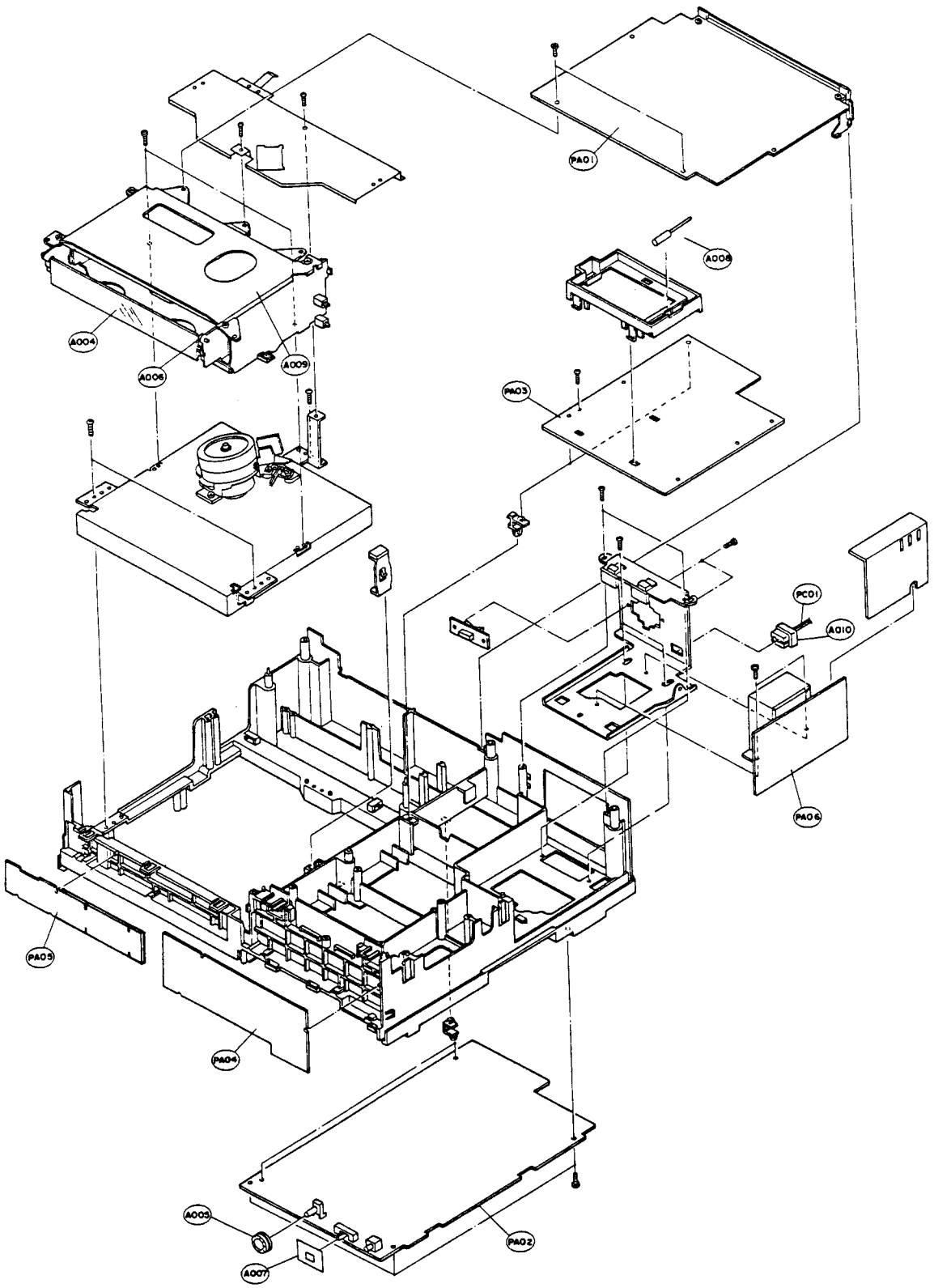
SECTION 6
EXPLODED VIEWS

ASS'Y No.	ASSEMBLY	PAGE
M 1	CABINET ASSEMBLY **(N9013G/N9014G)**	6-2
M 2	CHASSIS ASSEMBLY **(N9013G/N9014G)**	6-3
M 3	MECHANISM ASSEMBLY **(N9013G/N9014G)**	6-4
M 4	MECHANISM ASSEMBLY **(N9013G/N9014G)**	6-5
M 5	CASSETTE HOUSING ASSEMBLY **(N9013G/N9014G)**	6-6
M 6	REMOTE CONTROL UNIT **(N9013G)**	6-7
M 6	REMOTE CONTROL UNIT **(N9014G)**	6-8

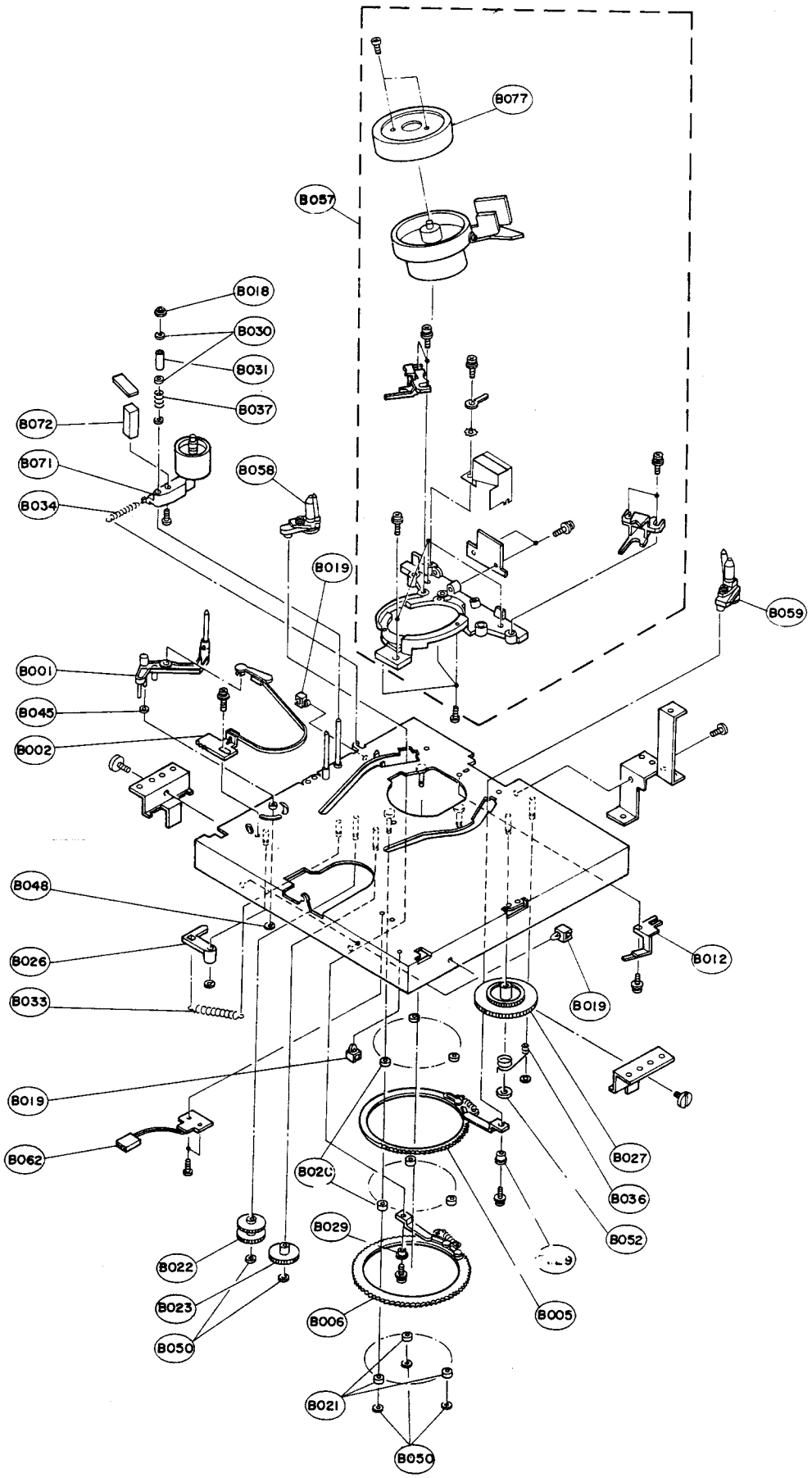
M1 CABINET ASSEMBLY (N9013G/N9014G)



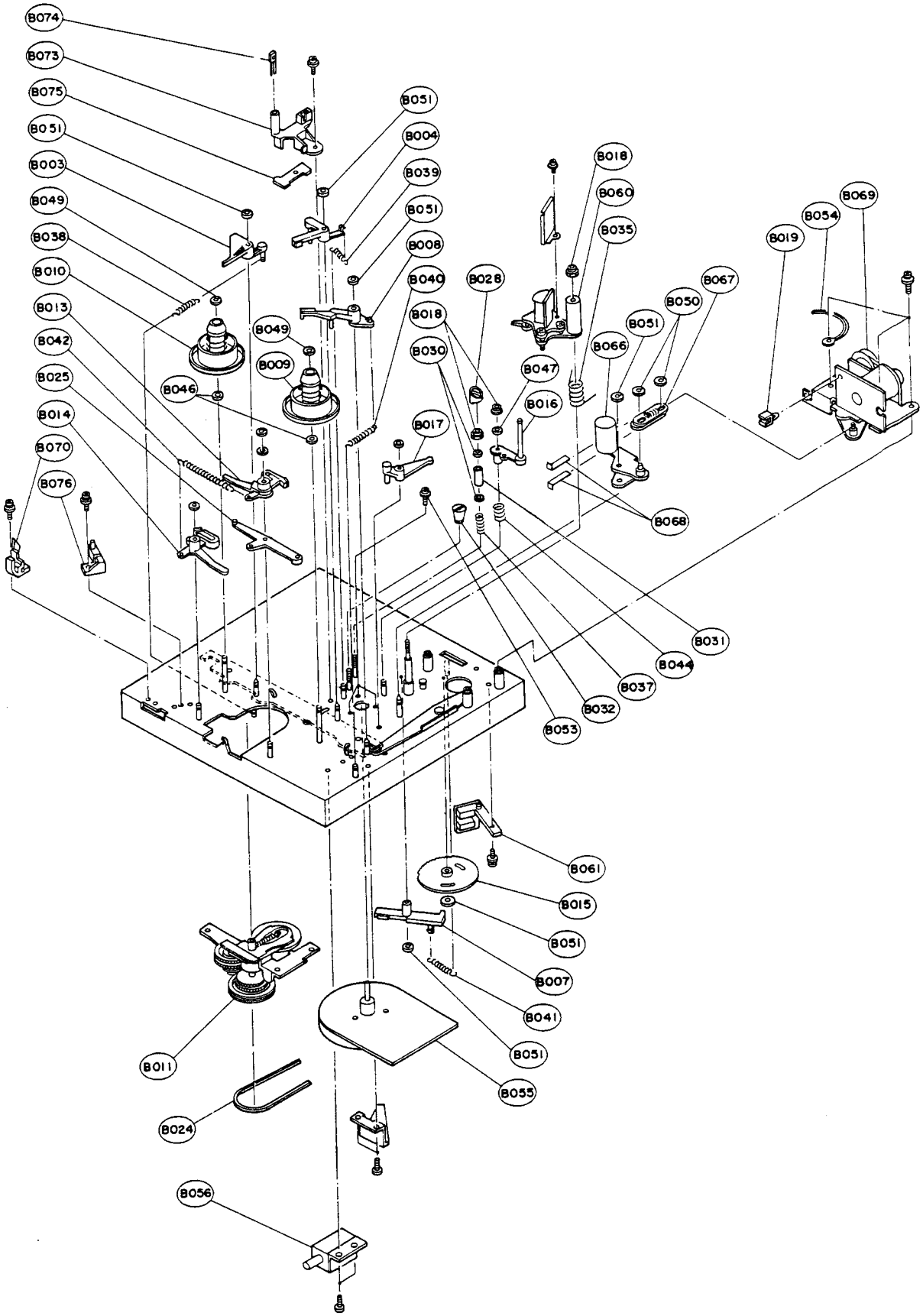
M2 CHASSIS ASSEMBLY (N9013G/N9014G)



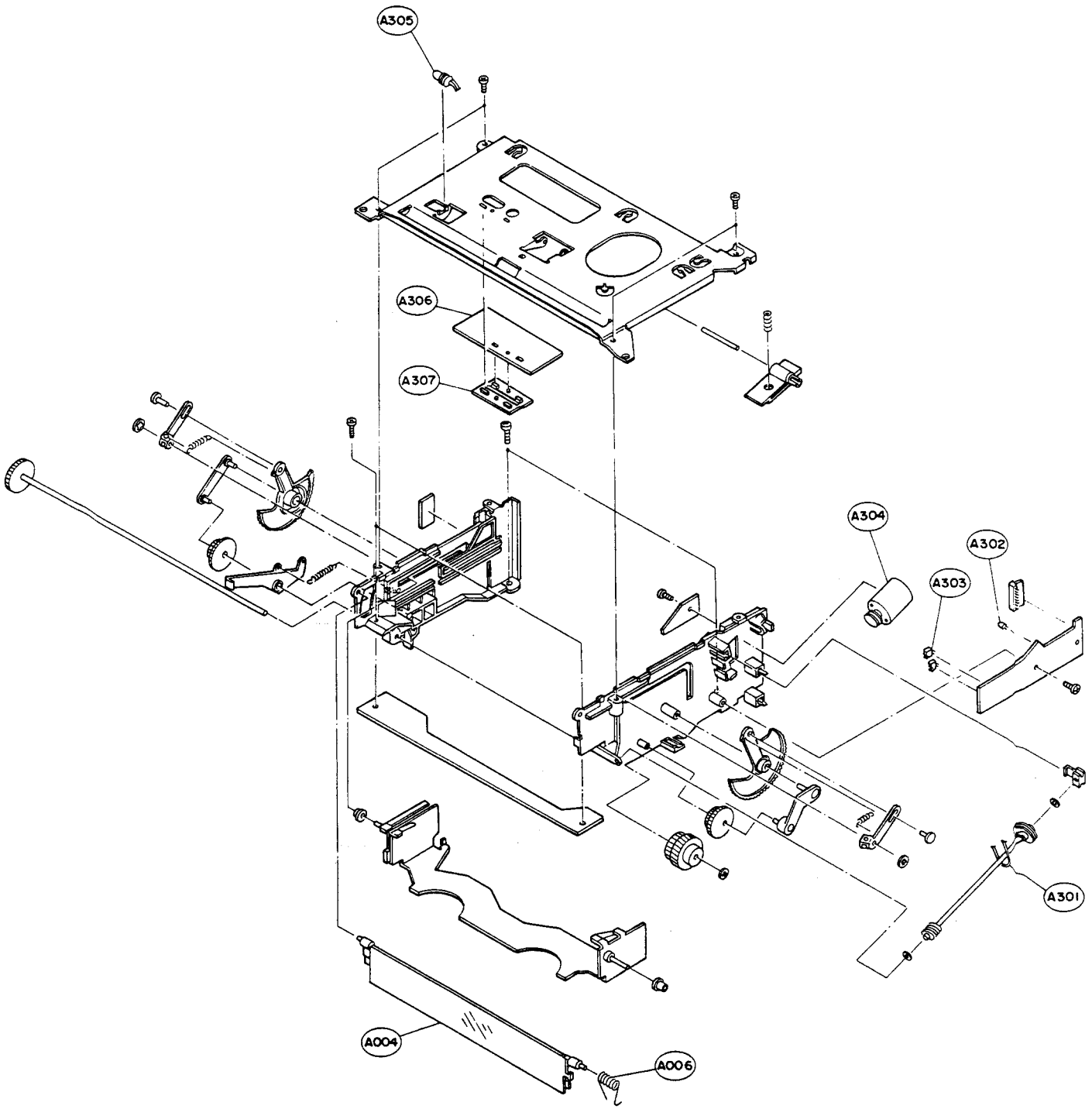
M3 MECHANISM ASSEMBLY (N9013G/N9014G)



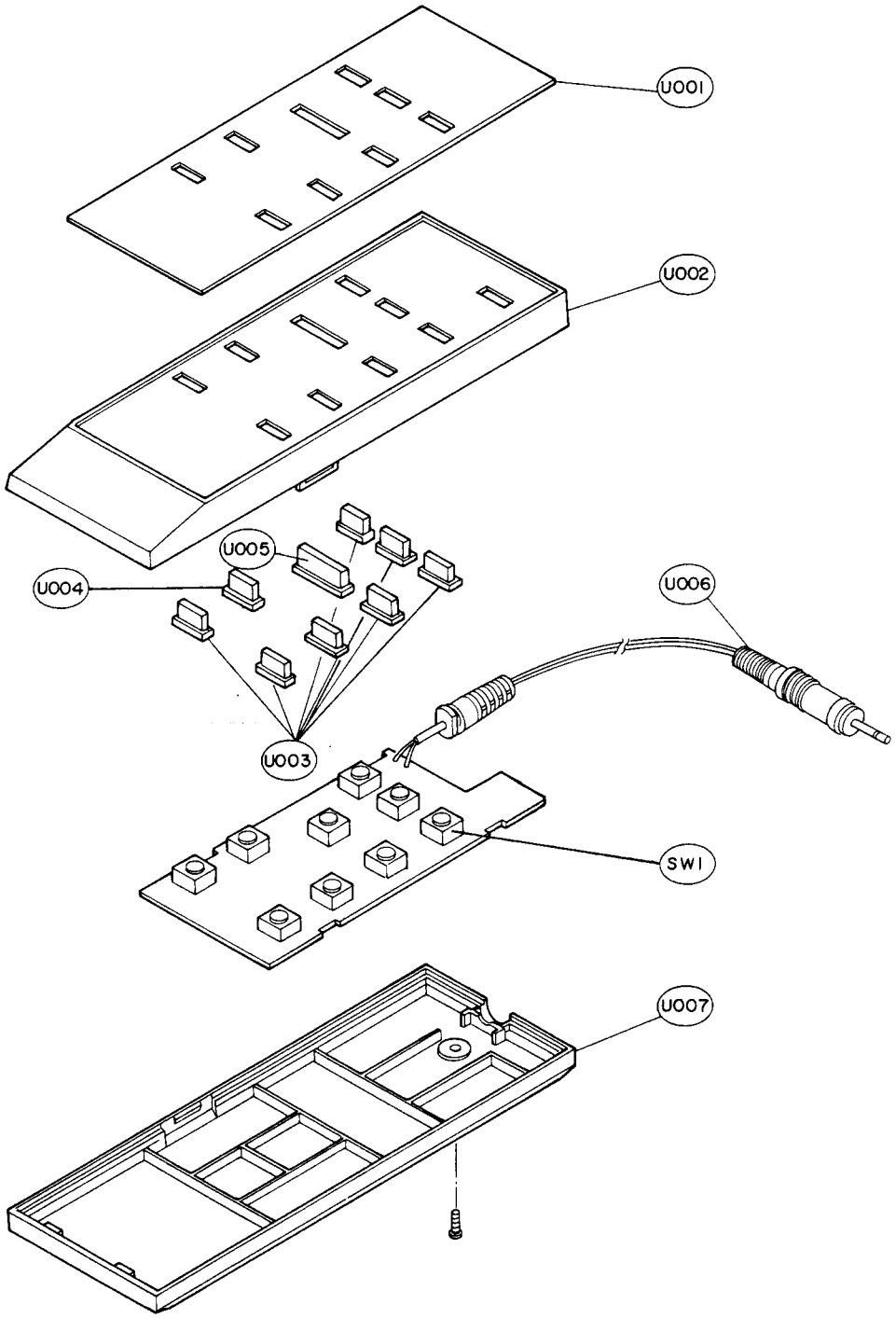
M4 MECHANISM ASSEMBLY (N9013G/N9014G)



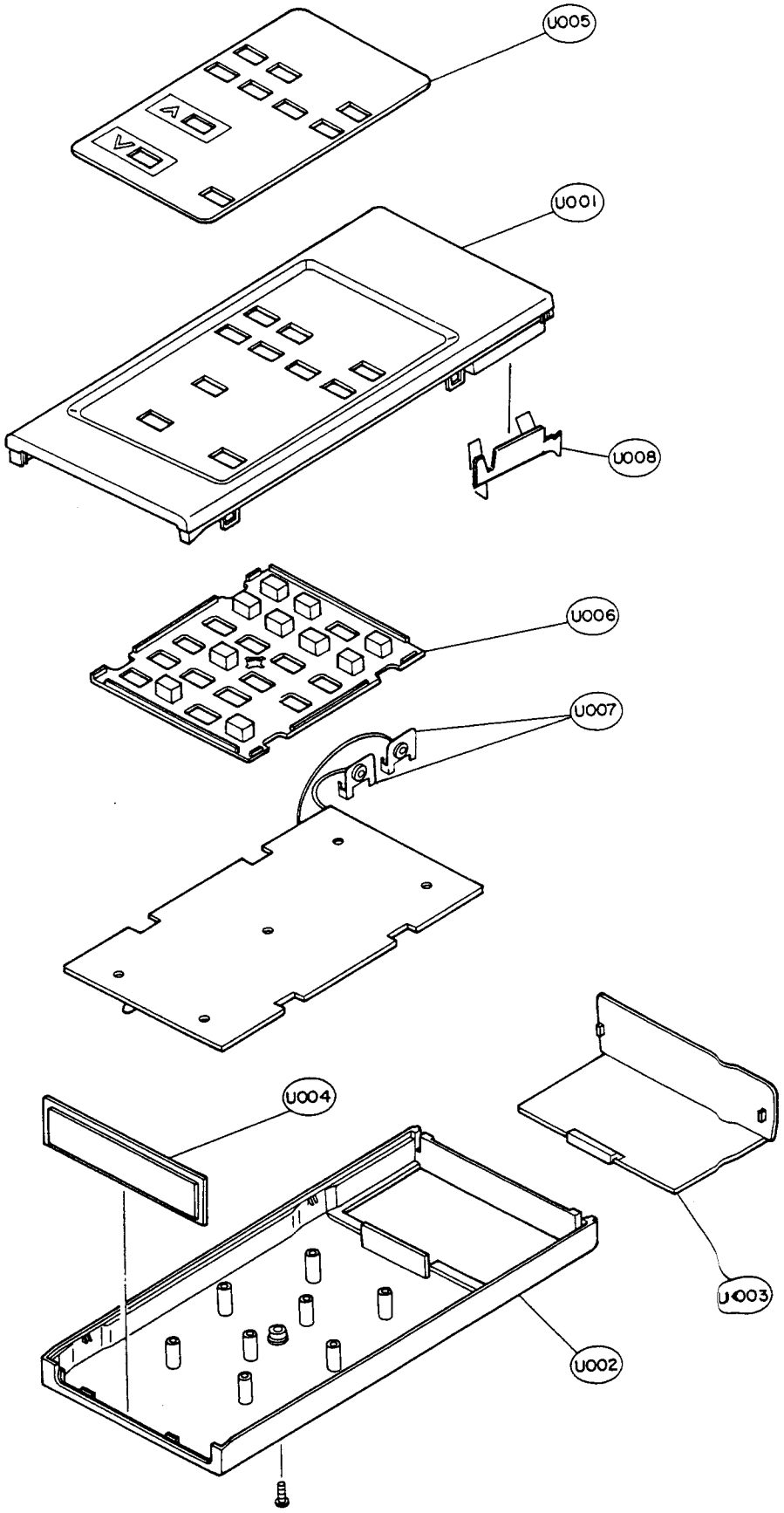
M5 CASSETTE HOUSING ASSEMBLY (N9013G/N9014G)



M6 REMOTE CONTROL UNIT (N9013G/N9014G)



M 7 REMOTE CONTROL UNIT (N9014G)



SECTION 7
ELECTRICAL PARTS LIST BY ASSEMBLIES (850611)

(N9013G)

ASSEMBLY	PAGE
S/S/A/R Assy	7-2
FUNCTION PWB Assy	7-4
VIDEO PWB Assy	7-5
TUNER/IF PWB Assy	7-8
TIMER PWB Assy	7-9
POWER UNIT PWB Assy	7-10
MECHANISM Assy	7-11
CHASSES Assy	7-12
CASSETTE HOUSING Assy	7-13
REMOTE CONTROL UNIT	7-13

MODEL : SYS/SER/AUD/REG ASSY

SYMBOL			PARTS NO	DESCRIPTION	QTY
				*** ICS ***	
IC502			37101238	UPC1514CA(AUDIO)	1
IC501			37101239	UPC1513HA(SWITCH)	1
IC303			37101241	IC BA4558	1
IC104			37101246	IC BA6993	1
IC101	IC102		37151241	IC BA6209	2
IC301			37151243	MOS UPD6111	1
IC103			37151252	MOS UPD7538C-077(SYSCON)	1
				*** TRANSISTORS ***	
TR301	TR302	TR308	355D1931	TR 2SC2785(E,F,H,J)AT	18
TR309	TR310	TR311			
TR314	TR315	TR317			
TR321	TR322	TR325			
TR326	TR327	TR604			
TR606	TR607	TR608			
TR101	TR103	TR104	355D2710	DTC 124ES AT	8
TR105	TR109	TR110			
TR111	TR313				
TR312	TR323	TR329	355D2711	DTC 144ES AT	5
TR602	TR609				
TR108	TR316	TR319	355K1131	2SA1175 (E,F,H,J),AT	5
TR320	TR324				
TR601			35501216	TR,2SB772(P)	1
TR502			35520340	2SB641 P,Q,R	1
TR501			35542709	DTC 114ES	1
TR503			35562144	TR,2SD638 R,S	1
TR107			35562518	TR 2SD1227M R	1
TR106			35562718	TR 2SD1228M(R)	1
				*** DIODES ***	
D102	D103	D106	360KC955	SILICON DIODE,RV35V	13
D115	D301	D302			
D303	D306	D307			
D308	D313	D314			
D501					
D304	D305		36001527	DIODE 1SS53	2
D309			36003102	DIODE RD-16EB3	1
D101			36003112	DIODE,RD9.1EB-3	1
D107	D108		36902080	DIODE 10E2(FORMING)	2
				*** VARIABLE RESISTORS ***	
VR503			41951142	R,VARIABLE 1.0K,B	1
VR306			41951144	R,VARIABLE 2.2K,B	1

MODEL : SYS/SER/AUD/REG ASSY

SYMBOL			PARTS NO	DESCRIPTION	QTY
VR502			41951149	R,VARIABLE 15K,E	1
VR303	VR304		41951152	R,VARIABLE 47K,E	2
VR305			41951156	R,VARIABLE 220K,B	1
VR302			41951158	R,VARIABLE 470K,B	1
VR501			41951160	R,VARIABLE 1.0M,B	1
VR301			41953007	VR500KB(CT)	1
				*** RELAYS & SWITCHES ***	
SW301			65180023	SWITCH SLIDE	1
				*** COILS & FILTERS ***	
RA101			39906012	R,BLOCK 100K,M*5,1/8W	1
L101			61052029	COIL,FILTER 100UH	1
L503			61052038	COIL,FILTER 560UH	1
L301			61052041	COIL,FILTER 1000UH	1
L501			61091014	FILTER COIL 183	1
L502			61091020	FILTER COIL 222	1
T501			61815152	BIAS OSC TRANS	1
				*** ELECTRICAL PARTS & MISCALLENEOUS PARTS ***	
X101			39080016	CERAMIC RESONATOR 400KHZ	1
X301			64004134	X,TAL 4.43MHZ	1
JK101			70905622	REMOCON JACK 2.5MM	1
				*** RESISTORS ***	
R514			401KE613	R,CARBON 3.3H 5% 1/6W	1
R500	R512		401KE625	R,CARBON 10H 5% 1/6W	2
R360			401KE641	R,CARBON 47H 5% 1/6W	1
R509			401KE647	R,CARBON 82H 5% 1/6W	1
R523	R527		401KE649	R,CARBON 100H 5% 1/6W	2
R505			401KE657	R,CARBON 220H 5% 1/6W	1
R306			401KE659	R,CARBON 270H 5% 1/6W	1
R146			401KE661	R,CARBON 330H 5% 1/6W	1
R160	R393	R403	401KE665	R,CARBON 470H 5% 1/6W	7
R409	R529	R603			
R608					
R144	R164	R388	401KE673	R,CARBON 1.0K 5% 1/6W	10
R398	R404	R517			
R605	R610	R614			
R615					
R522			401KE679	R,CARBON 1.8K 5% 1/6W	1
R172	R309	R317	401KE681	R,CARBON 2.2K 5% 1/6W	8
R336	R342	R394			

MODEL : SYS/SER/AUD/REG ASSY

SYMBOL			PARTS NO	DESCRIPTION	QTY
R408	R613		401KE681	R/CARBON 2.2K 5% 1/6W	8
R105	R106	R112	401KE685	R/CARBON 3.3K 5% 1/6W	19
R113	R114	R115			
R116	R117	R118			
R123	R124	R125			
R126	R127	R128			
R130	R132	R150			
R153					
R376	R377	R502	401KE687	R/CARBON 3.9K 5% 1/6W	4
R519					
R612			401KE688	R/CARBON 4.3K 5% 1/6W	1
R142	R332	R414	401KE689	R/CARBON 4.7K 5% 1/6W	6
R416	R420	R423			
R385	R510	R520	401KE691	R/CARBON 5.6K 5% 1/6W	5
R607	R611				
R351	R606		401KE692	R/CARBON 6.2K 5% 1/6W	2
R383			401KE693	R/CARBON 6.8K 5% 1/6W	1
R350	R397		401KE695	R/CARBON 8.2K 5% 1/6W	2
R104	R107	R108	401KE697	R/CARBON 10K 5% 1/6W	16
R109	R131	R135			
R137	R154	R330			
R359	R373	R374			
R390	R410	R417			
R466					
R387	R396		401KE699	R/CARBON 12K 5% 1/6W	2
R141	R380	R381	401KE701	R/CARBON 15K 5% 1/6W	3
R386			401KE703	R/CARBON 18K 5% 1/6W	1
R143	R361	R369	401KE705	R/CARBON 22K 5% 1/6W	9
R412	R421	R441			
R504	R507	R513			
R503			401KE706	R/CARBON 24K 5% 1/6W	1
R508			401KE707	R/CARBON 27K 5% 1/6W	1
R310	R311	R312	401KE709	R/CARBON 33K 5% 1/6W	12
R362	R363	R364			
R365	R366	R391			
R392	R406	R424			
R157	R158	R307	401KE713	R/CARBON 47K 5% 1/6W	32
R308	R315	R316			
R318	R319	R334			
R335	R337	R338			
R340	R341	R343			
R344	R353	R354			
R355	R356	R357			
R358	R370	R371			
R372	R375	R395			
R411	R418	R419			
R462	R511				
R402			401KE714	R/CARBON 51K 5% 1/6W	1
R501	R521		401KE715	R/CARBON 56K 5% 1/6W	2
R145	R147	R152	401KE721	R/CARBON 100K 5% 1/6W	8
R159	R320	R401			

MODEL : SYS/SER/AUD/REG ASSY

SYMBOL			PARTS NO	DESCRIPTION	QTY
R415	R601		401KE721	R/CARBON 100K 5% 1/6W	8
R352	R379		401KE723	R/CARBON 120K 5% 1/6W	2
R101	R102	R422	401KE729	R/CARBON 220K 5% 1/6W	3
R516			401KE731	R/CARBON 270K 5% 1/6W	1
R407			401KE733	R/CARBON 330K 5% 1/6W	1
R155			401KE739	R/CARBON 560K 5% 1/6W	1
R313	R382		401KE743	R/CARBON 820K 5% 1/6W	2
R333	R389	R400	401KE745	R/CARBON 1.0M 5% 1/6W	6
R405	R413	R506			
R463			40105213	R/CARBON 47K 5% 1/6W	1
R530			40105715	R/CARBON 56K 5% 1/6W	1
R103			40121661	R/CARBON 330H 5% 1/2W	1
R173			40351109	R/METAL 2.2H 5% 1W	1
R302			40399006	R/METAL 0.47H 5% 1W	1
R515			409HB657	R/CARBON 220H 5% 1/4W	1
R616			409HB683	R/CARBON 2.7K 5% 1/4W	1
R110	R111	R121	409HB685	R/CARBON 3.3K 5% 1/4W	6
R134	R149	R161			
R162	R304	R331	409HB697	R/CARBON 10K 5% 1/4W	3
R329	R367		409HB709	R/CARBON 33K 5% 1/4W	2
R151			409HB721	R/CARBON 100K 5% 1/4W	1
R368			409HB743	R/CARBON 820K 5% 1/4W	1
R321	R339		409HB745	R/CARBON 1.0M 5% 1/4W	2
R346			409HB749	R/CARBON 1.5M 5% 1/4W	1
R323	R347		409HB753	R/CARBON 2.2M 5% 1/4W	2
R322			409HB761	R/CARBON 4.7M 5% 1/4W	1
R602			40912161	R/CARBON 2.2K 5% 1/2W	1
R301			40913109	R/CARBON 2.2H 5% 1/4W	1
R528			40913125	R/CARBON 10H 5% 1/4W	1
R303			40913141	R/CARBON 47H 5% 1/4W	1
R399			40983173	R/CARBON 1.0K 5% 1/4W	1
R604	R609		40983177	R/CARBON 1.5K 5% 1/4W	2
		***	CAPACITORS	***	
C602	C606		421A0417	C/CERAMIC 50V 2200PF	2
C101	C104	C116	421A0425	C/CERAMIC 50V 0.01UF	4
C304					
C502			421C0206	C/CERAMIC 50V 270PF	1
C333			421C0209	C/CERAMIC 50V 470PF	1
C501			421C0213	C/CERAMIC 50V 1000PF	1
C119			42110925	C/CERAMIC 50V 0.01UF	1
C331			42130225	C/CERAMIC 50V 0.01UF	1
C102	C103		42199002	C/CERAMIC 50V 0.1UF	2
C315			423A1015	C/CERAMIC 50V 10PF	1
C323			423A1029	C/CERAMIC 50V 22PF	1
C306	C311	C316	423A1037	C/CERAMIC 50V 47PF	4

MODEL : SYS/SER/AUD/REG ASSY

SYMBOL			PARTS NO	DESCRIPTION	QTY
C319			423A1037	C/CERAMIC 50V 47PF	4
C105	C106	C107	423A1045	C/CERAMIC 50V 100PF	6
C108	C109	C607			
C113	C512		423A1057	C/CERAMIC 50V 330PF	2
C110	C111		423A1101	C/CERAMIC 50V 470PF	2
C339			42311053	C/CERAMIC 50V 220PF	1
C360	C361		42312061	C/CERAMIC 50V 15PF	2
C523			429G6501	C/FILM 50V 1000PF 5%	1
C307	C308	C309	429G6505	C/FILM 50V 2200PF 5%	3
C365	C514	C528	429G6513	C/FILM 50V 0.010UF 5%	3
C345			429G6514	C/FILM 50V 0.012UF 5%	1
C515	C519		429G6515	C/FILM 50V 0.015UF 5%	2
C312	C313		429G6516	C/FILM 50V 0.018UF 5%	2
C317	C318		429G6519	C/FILM 50V 0.033UF 5%	2
C320	C321		429G6522	C/FILM 50V 0.056UF 5%	2
C344			429G6523	C/FILM 50V 0.068UF 5%	1
C334	C506		429G6524	C/FILM 50V 0.082UF 5%	2
C513			42974167	C/FILM 100V 0.056UF 5%	1
C326			42978057	C FILM 50V 0.1UF	1
C611			42978061	C FILM 50V 0.15UF	1
C346			42978065	C FILM 50V 0.22UF	1
C604	C608	C609	430A8113	C/ELEC 16V 100UF	4
C610					
C601	C605		430A8118	C/ELEC 25V 47UF	2
C516			43018113	C/ELEC 16V 100UF	1
C504			439H0053	C/ELEC 50V 1.0UF	1
C517			439H0055	C/ELEC 50V 2.2UF	1
C327			439J3014	C/ELEC 10V 47UF	1
C303	C503		439J3015	C/ELEC 10V 100UF	2
C329	C508		439J3025	C/ELEC 16V 22UF	2
C511	C518		439J3026	C/ELEC 16V 33UF	2
C302	C521		439J3040	C/ELEC 25V 47UF	2
C509	C510	C522	439J3060	C/ELEC 50V 1.0UF	3
C117	C343		439J3062	C/ELEC 50V 3.3UF	2
C114	C325	C363	439J3063	C/ELEC 50V 4.7UF	3
C115	C314	C328	439J3064	C/ELEC 50V 10UF	14
C330	C332	C335			
C336	C337	C338			
C340	C341	C342			
C505	C524				
C347			439J3102	C/ELEC 50V 0.1UF	1
C364			43993006	C/ELEC 6.3V 470UF	1
C301			43993044	C/ELEC 25V 470UF	1

MODEL : FUNCTION PWB ASSY

SYMBOL			PARTS NO	DESCRIPTION	QTY
		***	TRANSISTORS	***	
TR001	TR002	TR003	35542709	DTC 114ES	3
		***	DIODES	***	
D010			360KA527	DIODE 1SS53	1
D001	D002	D003	360KC955	SILICON DIODE/RV35V	12
D004	D005	D006			
D007	D008	D009			
D011	D012	D013			
LED002	LED004		36904277	LED GRN SLH-34MC	2
LED006			36904278	LED RED SLH-34VC	1
LED001	LED003	LED005	36904279	LED UMB SLH-34DC	3
		***	RELAYS & SWITCHES	***	
SW001	SW002	SW003	65330052	TACT SWITCH	8
SW004	SW005	SW006			
SW007	SW008				
		***	RESISTORS	***	
R007			401KE697	R/CARBON 10K 5% 1/6W	1
R002	R004		409HB646	R/CARBON 75H 5% 1/4W	2
R003	R005	R006	409HB653	R/CARBON 150H 5% 1/4W	3
R001			409HB669	R/CARBON 680H 5% 1/4W	1

MODEL : VIDEO PWB ASSY

SYMBOL			PARTS NO	DESCRIPTION	QTY
			*** CRT & TUNER ***		
			34353001	RF CONV.(PAL.BG)	1
			*** ICS ***		
IC203			37101244	IC HA178M06P	1
IC201			37101248	HA11811ANT (CHROMA)	1
IC202			37101249	BA7025L (SECAM DET)	1
IC004			37101250	IC BA7026L	1
IC001			37151235	AN6306(Y-REC)	1
IC002			37151236	AN6337(Y-PB)	1
IC003			37151238	AN6326N(HEAD AMP)	1
			*** TRANSISTORS ***		
TR009	TR010	TR015	355D1931	TR 2SC2785(E,F,H,J)AT	14
TR016	TR017	TR018			
TR019	TR028	TR202			
TR205	TR206	TR207			
TR208	TR209				
TR001	TR004	TR011	355D2710	DTC 124ES AT	9
TR021	TR023	TR027			
TR029	TR204	TR213			
TR002	TR003	TR005	355K1131	2SA1175 (E,F,H,J),AT	7
TR006	TR026	TR203			
TR210					
TR201	TR212		355K2107	TR,UN4112,AT (22K)	2
TR014			35502442	TR 2SA874 Q,R	1
TR022	TR024		35520344	TR.2SB641 R,S	2
TR217			35542710	DTC 124ES	1
TR013			35543042	TR 2SC1652 Q,R	1
TR012			35543304	TR 2SC2377 D	1
			*** DIODES ***		
D201	D204		360KC955	SILICON DIODE,RV35V	2
D001	D002	D202	36001527	DIODE 1SS53	4
D203					
ZD001			36003091	DIODE,ZENER RD3.3EB	1
D205			36902080	DIODE 10E2(FORMING)	1
			*** VARIABLE RESISTORS ***		
VR007	VR008	VR009	41951142	R,VARIABLE 1.0K,B	5
VR203	VR204				
VR006			41951146	R,VARIABLE 4.7K,B	1

MODEL : VIDEO PWB ASSY

SYMBOL			PARTS NO	DESCRIPTION	QTY
VR001	VR002	VR003	41951148	R,VARIABLE 10K,B	8
VR005	VR201	VR202			
VR205	VR206				
VR004			41951150	R,VARIABLE 22K,B	1
			*** COILS & FILTERS ***		
L021			610G1510	FILTOR COIL 2.2UH (S)	1
L009	L010		610G1511	FILTER COIL 3.3UH AT (S)	2
L001	L004	L005	610G1529	FILTER COIL 100UH AT (S)	12
L006	L012	L016			
L026	L027	L203			
L209	L210	L212			
L018			610G1541	FILTER COIL 1000UH AT(S)	1
L011	L015	L024	610G1619	FILTER COIL 15UH AT (S)	5
L025	L205				
L020			610G1621	FILTER COIL 22UH AT (S)	1
L023			610G1624	FILTER COIL 39UH AT (S)	1
L008			610G1626	FILTER COIL 56UH AT (S)	1
L013			610G1628	FILTER COIL 82UH AT (S)	1
L014	L022		610G1631	FILTER COIL 150UH AT (S)	2
L003			610G1632	FILTER COIL 180UH AT (S)	1
L019			610G1637	FILTER COIL 470UH AT (S)	1
L206			610G1640	FILTER COIL 820UH (S)	1
L202			61071529	FILTER COIL 100UH (S)	1
L208			61071634	COIL,FILTER 270UH(S)	1
L207			61072217	COIL,FILTER 2.2MH	1
L204			61072224	COIL,FILTER 8.2MH	1
FL206			61137009	CERAMIC FILTER 4.16MHZ	1
DL001			61551048	DELAY LINE 1H	1
DL201			61551049	DELAY LINE 2H	1
FL201			61827005	L.P.F. (PB CHROMA)	1
FL001			61827028	L.P.F 3.2MHZ	1
FL002			61827029	L.P.F 4.0MHZ	1
FL203			61827031	B.P.F 4.4.MHZ	1
FL204			61827032	L.P.F 1.5MHZ	1
FL205			61827033	B.P.F 5.06MHZ	1
FL202			61828012	EQ.FILTER (CHROMA)	1
FL003			61828013	RF EQ.FILTER (PAL)	1
L211			61828014	LC FILTER (8KHZ TRAP)	1
			*** ELECTRICAL PARTS & MISCALLENEOUS PARTS		***
C078	C079		44209014	C,TRIMMER 60PF	2
X201			64004130	X'TAL 4.433MHZ	1
X202			64004131	X'TAL BLOCK 4.435MHZ	1
			71128517	ANT.TERMINAL BOARD(K,G,E)	1

MODEL : VIDEO PWB ASSY

SYMBOL			PARTS NO	DESCRIPTION	QTY
		***	RESISTORS	***	
R081	R083	R117	401KE625	R/CARBON 10H 5% 1/6W	3
R077	R078	R091	401KE643	R/CARBON 56H 5% 1/6W	3
R062			401KE645	R/CARBON 68H 5% 1/6W	1
R104	R105		401KE646	R/CARBON 75H 5% 1/6W	2
R066			401KE647	R/CARBON 82H 5% 1/6W	1
R041	R073		401KE649	R/CARBON 100H 5% 1/6W	2
R058			401KE652	R/CARBON 130H 5% 1/6W	1
R057	R060	R074	401KE653	R/CARBON 150H 5% 1/6W	3
R072			401KE655	R/CARBON 180H 5% 1/6W	1
R021			401KE657	R/CARBON 220H 5% 1/6W	1
R061	R097		401KE659	R/CARBON 270H 5% 1/6W	2
R026	R088	R108	401KE661	R/CARBON 330H 5% 1/6W	7
R209	R216	R221			
R256					
R017	R030	R059	401KE665	R/CARBON 470H 5% 1/6W	5
R067	R210				
R064			401KE667	R/CARBON 560H 5% 1/6W	1
R090	R208	R242	401KE669	R/CARBON 680H 5% 1/6W	4
R243					
R071			401KE671	R/CARBON 820H 5% 1/6W	1
R002	R003	R024	401KE673	R/CARBON 1.0K 5% 1/6W	20
R033	R044	R093			
R095	R109	R214			
R224	R225	R226			
R231	R232	R237			
R238	R239	R240			
R252	R260				
R009	R032	R069	401KE675	R/CARBON 1.2K 5% 1/6W	12
R098	R205	R211			
R218	R223	R229			
R241	R244	R258			
R012	R022	R031	401KE677	R/CARBON 1.5K 5% 1/6W	10
R086	R087	R096			
R101	R103	R217			
R219					
R035	R037	R089	401KE679	R/CARBON 1.8K 5% 1/6W	3
R259			401KE680	R/CARBON 2.0K 5% 1/6W	1
R007	R008	R036	401KE681	R/CARBON 2.2K 5% 1/6W	7
R063	R116	R215			
R251					
R079	R082		401KE683	R/CARBON 2.7K 5% 1/6W	2
R106	R212	R228	401KE685	R/CARBON 3.3K 5% 1/6W	3
R010	R016	R039	401KE687	R/CARBON 3.9K 5% 1/6W	3
R006	R112	R203	401KE689	R/CARBON 4.7K 5% 1/6W	6
R220	R235	R236			
R004	R025	R056	401KE691	R/CARBON 5.6K 5% 1/6W	4

MODEL : VIDEO PWB ASSY

SYMBOL			PARTS NO	DESCRIPTION	QTY
R249			401KE691	R/CARBON 5.6K 5% 1/6W	4
R018	R068	R075	401KE693	R/CARBON 6.8K 5% 1/6W	5
R076	R233				
J043	R015	R084	401KE697	R/CARBON 10K 5% 1/6W	8
R085	R094	R110			
R230	R246				
R114	R245		401KE701	R/CARBON 15K 5% 1/6W	2
R001	R055		401KE703	R/CARBON 18K 5% 1/6W	2
R028	R029	R100	401KE705	R/CARBON 22K 5% 1/6W	6
R102	R201	R253			
R113	R207	R227	401KE713	R/CARBON 47K 5% 1/6W	3
R023			401KE715	R/CARBON 56K 5% 1/6W	1
R213	R257		401KE721	R/CARBON 100K 5% 1/6W	2
R206			401KE723	R/CARBON 120K 5% 1/6W	1
R250			401KE725	R/CARBON 150K 5% 1/6W	1
R020			401KE729	R/CARBON 220K 5% 1/6W	1
R234			401KE731	R/CARBON 270K 5% 1/6W	1
R222			401KE735	R/CARBON 390K 5% 1/6W	1
R034	R040		401KE739	R/CARBON 560K 5% 1/6W	2
R261			401KE743	R/CARBON 820K 5% 1/6W	1
R042			401KE745	R/CARBON 1.0M 5% 1/6W	1
R119			40105697	R/CARBON 10K 5% 1/6W	1
J052			40105713	R/CARBON 47K 5% 1/6W	1
R115			40982149	R/CARBON 100H 5% 1/4W	1
R019			40982169	R/CARBON 680H 5% 1/4W	1
R204			40982171	R/CARBON 820H 5% 1/4W	1
R005	R045		40982173	R/CARBON 1.0K 5% 1/4W	2
R043			40982175	R/CARBON 1.2K 5% 1/4W	1
R118			40982177	R/CARBON 1.5K 5% 1/4W	1
R080			40982183	R/CARBON 2.7K 5% 1/4W	1
R092			40983167	R/CARBON 560H 5% 1/4W	1
R202			40983201	R/CARBON 15K 5% 1/4W	1
		***	CAPACITORS	***	
C027	C029	C031	421A0425	C/CERAMIC 50V 0.01UF	15
C067	C092	C204			
C205	C207	C211			
C212	C215	C234			
C235	C240	C256			
C032	C077	C080	421A0429	C/CERAMIC 50V 0.022UF	8
C213	C225	C227			
C230	C231				
C070	C071	C072	421A0933	C/CERAMIC 50V 0.047UF	6
C073	C082	C250			
C088	C219		421C0210	C/CERAMIC 50V 560PF	2
C060			421C0212	C/CERAMIC 50V 820PF	1
C110			421C0213	C/CERAMIC 50V 1000PF	1

MODEL : VIDEO PWB ASSY

SYMBOL			PARTS NO	DESCRIPTION	QTY
C117			42110425	C,CERAMIC 50V 0.01UF	1
C010	C025	C045	42141422	C,CERAMIC 50V 0.047UF	7
C063	C209	C252			
C267					
C257			42199001	C,CERAMIC 50V 0.1UF	1
C102			423A1011	C,CERAMIC 50V 6PF	1
C090			423A1027	C,CERAMIC 50V 18PF	1
C030	C100	C106	423A1029	C,CERAMIC 50V 22PF	5
C111	C229				
C115			423A1031	C,CERAMIC 50V 27PF	1
C056			423A1033	C,CERAMIC 50V 33PF	1
C064			423A1043	C,CERAMIC 50V 82PF	1
C008	C017	C035	423A1047	C,CERAMIC 50V 120PF	3
C084			423A1049	C,CERAMIC 50V 150PF	1
C085	C112		423A1051	C,CERAMIC 50V 180PF	2
C028	C066	C087	423A1053	C,CERAMIC 50V 220PF	3
C002	C004		423A1055	C,CERAMIC 50V 270PF	2
C058			423A1056	C,CERAMIC 50V 300PF	1
C037	C059		423A1100	C,CERAMIC 50V 390PF	2
C104			42311013	C,CERAMIC 50V 8PF	1
C089			42311045	C,CERAMIC 50V 100PF	1
C065			42311051	C,CERAMIC 50V 180PF	1
C086			42311103	C,CERAMIC 50V 430PF	1
C007	C237		42312065	C,CERAMIC 50V 22PF	2
C239			42312067	C,CERAMIC 50V 27PF	1
C018	C026	C238	42312071	C,CERAMIC 50V 39PF	3
C061			429G6501	C,FILM 50V 1000PF 5%	1
C041	C057		429G6502	C,FILM 50V 1200PF 5%	2
C033			429G6505	C,FILM 50V 2200PF 5%	1
C021	C022		429G6506	C,FILM 50V 2700PF 5%	2
C114			429G6507	C,FILM 50V 3300PF 5%	1
C009	C015	C019	429G6513	C,FILM 50V 0.010UF 5%	7
C068	C069	C208			
C232					
C220			429G6515	C,FILM 50V 0.015UF 5%	1
C223	C236		429G6517	C,FILM 50V 0.022UF 5%	2
C001	C221		429G6519	C,FILM 50V 0.033UF 5%	2
C218	C228		429G6521	C,FILM 50V 0.047UF 5%	2
C214			429G6522	C,FILM 50V 0.056UF 5%	1
C226			429G6523	C,FILM 50V 0.068UF 5%	1
C013	C083	C210	430A8107	C,ELEC 10V 47UF	3
C043	C094		430A8109	C,ELEC 16V 10UF	2
C103	C254		430A8111	C,ELEC 16V 33UF	2
C011	C023	C042	430A8112	C,ELEC 16V 47UF	4
C253					
C024	C255		430A8113	C,ELEC 16V 100UF	2
C012	C039		430A8114	C,ELEC 25V 4.7UF	2

MODEL : VIDEO PWB ASSY

SYMBOL			PARTS NO	DESCRIPTION	QTY
C062			430A8118	C,ELEC 25V 47UF	1
C016			430A8125	C,ELEC 50V 0.22UF	1
C020	C034	C036	430A8128	C,ELEC 50V 1UF	4
C038					
C014	C040		430A8129	C,ELEC 50V 2.2UF	2
C046			43018107	C,ELEC 10V 47UF	1
C263			43018112	C,ELEC 16V 47UF	1
C006			43311045	C,ELEC 50V 1UF	1
C091	C251		439J3014	C,ELEC 10V 47UF	2
C105	C201	C202	439J3027	C,ELEC 16V 47UF	7
C203	C259	C260			
C264					
C107	C216		439J3038	C,ELEC 25V 22UF	2
C206			439J3059	C,ELEC 50V 0.47UF	1
C075	C076	C081	439J3060	C,ELEC 50V 1.0UF	4
C222					
C217			439J3062	C,ELEC 50V 3.3UF	1
C074	C224	C258	439J3064	C,ELEC 50V 10UF	3
C044			43993005	C,ELEC 6.3V 330UF	1
C265			43993014	C,ELEC 10V 47UF	1
C262			43993027	C,ELEC 16V 47UF	1
C233			43993063	C,ELEC 50V 4.7UF	1

MODEL : TUNER/IF PWB ASSY

SYMBOL			PARTS NO	DESCRIPTION	QTY
		***	CRT & TUNER ***		
			34383001	U/V TUNER	1
		***	ICS ***		
IC002			37101103	IC UPC1363C (CH SEL)	1
IC001			37101240	IC LA7530	1
		***	TRANSISTORS ***		
TR001	TR002	TR005	355D1931	TR 2SC2785(E,F,H,J)AT	7
TR006	TR007	TR051			
TR052					
TR004	TR008	TR009	355K1131	2SA1175 (E,F,H,J),AT	7
TR010	TR050	TR060			
TR061					
TR003			35541906	TR,2SC2785(F)	1
TR062			35940502	TR,2SC1730 L	1
		***	DIODES ***		
D006	D008	D010	360KA009	DIODE 1S2473 AT26	15
D012	D014	D016			
D018	D020	D022			
D024	D026	D028			
D030	D032	D034			
D002	D003	D004	360KA025	DIODE,1SS133	22
D005	D007	D009			
D011	D013	D015			
D017	D019	D021			
D023	D025	D027			
D029	D031	D033			
D035	D036	D037			
D038					
D001			36003049	DIODE,ZENER MPC-574J	1
		***	VARIABLE RESISTORS ***		
PS001			41098344	TUNING VR 16KEY	1
VR001			41951148	R,VARIABLE 10K,B	1
		***	RELAYS & SWITCHES ***		
SW001			65180009	SLIDE SWITCH	1

MODEL : TUNER/IF PWB ASSY

SYMBOL			PARTS NO	DESCRIPTION	QTY
		***	COILS & FILTERS ***		
L002			61011535	SAW COIL 2R7	1
L061			61072111	COIL,FILTER 1.8UH	1
L003			61072121	COIL FILTER 12UH +-10%	1
L004			61072122	COIL FILTER 15UH +-10%	1
L060			61072128	COIL FILTER 47UH +-10%	1
FLC03			61105012	COIL,SIF FILTER 5.5UH	1
FLC04			61108004	CERAMIC TRAP 5.5MHZ	1
FLC02			61137025	CERAMIC DISCRI S5R5MC4	1
FLC01			61138010	FILTER	1
T003			61815131	TRAP COIL	1
T001	T002		61815155	V.IFT (9.5TURN)	2
		***	ELECTRICAL PARTS & MISCALLENEOUS PARTS		***
			70780010	CABLE(210MM)	1
		***	RESISTORS ***		
R070			401KE637	R,CARBON 33H 5% 1/6W	1
R072			401KE641	R,CARBON 47H 5% 1/6W	1
R001	R009		401KE647	R,CARBON 82H 5% 1/6W	2
R071			401KE649	R,CARBON 100H 5% 1/6W	1
R054			401KE653	R,CARBON 150H 5% 1/6W	1
R015			401KE659	R,CARBON 270H 5% 1/6W	1
R006	R064		401KE661	R,CARBON 330H 5% 1/6W	2
R007			401KE663	R,CARBON 390H 5% 1/6W	1
R053			401KE667	R,CARBON 560H 5% 1/6W	1
R014	R069		401KE669	R,CARBON 680H 5% 1/6W	2
R033	R036	R060	401KE673	R,CARBON 1.0K 5% 1/6W	5
R062	R063				
R003	R005	R061	401KE681	R,CARBON 2.2K 5% 1/6W	4
R074					
R004	R038		401KE685	R,CARBON 3.3K 5% 1/6W	2
R065			401KE689	R,CARBON 4.7K 5% 1/6W	1
R040	R042	R044	401KE691	R,CARBON 5.6K 5% 1/6W	3
R066			401KE693	R,CARBON 6.8K 5% 1/6W	1
R017			401KE695	R,CARBON 8.2K 5% 1/6W	1
R019	R025	R026	401KE697	R,CARBON 10K 5% 1/6W	5
R028	R050				
R073			401KE699	R,CARBON 12K 5% 1/6W	1
R016			401KE701	R,CARBON 15K 5% 1/6W	1
R058			401KE703	R,CARBON 18K 5% 1/6W	1
R034			401KE707	R,CARBON 27K 5% 1/6W	1

MODEL : TUNER/IF PWB ASSY

SYMBOL			PARTS NO	DESCRIPTION	QTY
R011	R027	R051	401KE709	R,CARBON 33K 5% 1/6W	3
R029	R030	R031	401KE713	R,CARBON 47K 5% 1/6W	9
R039	R041	R043			
R055	R056	R057			
R013			401KE717	R,CARBON 68K 5% 1/6W	1
R024			401KE721	R,CARBON 100K 5% 1/6W	1
R052			401KE737	R,CARBON 470K 5% 1/6W	1
R045			401KE745	R,CARBON 1.0M 5% 1/6W	1
R067			409HB665	R,CARBON 470H 5% 1/4W	1
R020	R021		409HB681	R,CARBON 2.2K 5% 1/4W	2
R012			409HB697	R,CARBON 10K 5% 1/4W	1
R037			409HB705	R,CARBON 22K 5% 1/4W	1
R032			409HB713	R,CARBON 47K 5% 1/4W	1
R035			409HB721	R,CARBON 100K 5% 1/4W	1
R023			409HB729	R,CARBON 220K 5% 1/4W	1
R018			40913117	R,CARBON 4.7H 5% 1/4W	1
R046	R059		40913125	R,CARBON 10H 5% 1/4W	2
R068			40913137	R,CARBON 33H 5% 1/4W	1
R022			40982237	R,CARBON 470K 5% 1/4W	1
		***	CAPACITORS ***		
C065	C066		421A0417	C,CERAMIC 50V 2200PF	2
C006	C009	C012	421A0425	C,CERAMIC 50V 0.01UF	5
C018	C063				
C023	C024		421C0209	C,CERAMIC 50V 470PF	2
C064			421C0213	C,CERAMIC 50V 1000PF	1
C001	C002		421DB133	C,CERAMIC 25V 0.01UF	2
C014			42130725	C,CERAMIC 50V 0.01UF	1
C052			42181397	C,CERAMIC 50V 0.022UF	1
C007			423A1035	C,CERAMIC 50V 39PF	1
C060			423A1041	C,CERAMIC 50V 68PF	1
C003	C004		423A2039	C,CERAMIC 50V 56PF	2
C061			423A3029	C,CERAMIC 50V 18PF	1
C016			429G6515	C,FILM 50V 0.015UF 5%	1
C025			429G6519	C,FILM 50V 0.033UF 5%	1
C021			439H0047	C,ELEC 50V 0.1UF	1
C022			439H0051	C,ELEC 50V 0.47UF	1
C013			439H0055	C,ELEC 50V 2.2UF	1
C019	C026		439J3024	C,ELEC 16V 10UF	2
C062			439J3025	C,ELEC 16V 22UF	1
C008	C027		439J3027	C,ELEC 16V 47UF	2
C005	C053		439J3028	C,ELEC 16V 100UF	2
C017	C050		439J3060	C,ELEC 50V 1.0UF	2
C015	C051		439J3062	C,ELEC 50V 3.3UF	2
C020			439J3067	C,ELEC 50V 47UF	1

MODEL : TIMER PWB ASSY

SYMBOL			PARTS NO	DESCRIPTION	QTY
		***	ICS ***		
IC002			37101242	IC BA6334	1
IC001			37151253	MOS UPD7538C-078(TIMER)	1
		***	TRANSISTORS ***		
TR001			355D1931	TR 2SC2785(E,F,H,J)AT	1
TR007	TR008	TR009	355D2710	DTC 124ES AT	3
TR006			355D2711	DTC 144ES AT	1
TR002	TR004	TR005	355K2108	TR,UN4213,AT (47K)	3
		***	DIODES ***		
D012	D015	D023	360KA527	DIODE 1SS53	4
D038					
D001	D002	D006	360KC955	SILICON DIODE,RV35V	19
D009	D011	D013			
D014	D017	D018			
D019	D024	D029			
D030	D032	D033			
D035	D036	D037			
D039					
D010	D028		36001026	DIODE 1SS133	2
D003	D004		36003112	DIODE,RD9.1EB-3	2
		***	RELAYS & SWITCHES ***		
SW001	SW002	SW005	65330052	TACT SWITCH	12
SW006	SW007	SW008			
SW009	SW010	SW011			
SW013	SW014	SW015			
		***	COILS & FILTERS ***		
RMC01			39906018	R-BLOCK 100K,M*4 1/8W	1
L001			61052041	COIL,FILTER 1000UH	1
		***	ELECTRICAL PARTS & MISCALLENEOUS PARTS		***
X001			39080016	CERAMIC RESONATOR 400KHZ	1
FIP1			67930036	FIP8HM7	1
		***	RESISTORS ***		
R016			401KE669	R,CARBON 680H 5% 1/6W	1
R030	R034		401KE673	R,CARBON 1.0K 5% 1/6W	2

MODEL : TIMER PWB ASSY

SYMBOL			PARTS NO	DESCRIPTION	QTY
R009	R010	R011	401KE685	R/CARBON 3.3K 5% 1/6W	6
R012	R013	R014			
R004			401KE696	R/CARBON 9.1K 5% 1/6W	1
R005	R033		401KE697	R/CARBON 10K 5% 1/6W	2
R031			401KE699	R/CARBON 12K 5% 1/6W	1
R018			401KE705	R/CARBON 22K 5% 1/6W	1
R007			401KE713	R/CARBON 47K 5% 1/6W	1
R008			401KE717	R/CARBON 68K 5% 1/6W	1
R001	R003	R028	401KE721	R/CARBON 100K 5% 1/6W	4
R029					
R032			401C5217	R/CARBON 68K 5% 1/6W	1
R035			409HB646	R/CARBON 75H 5% 1/4W	1
R006			409HB681	R/CARBON 2.2K 5% 1/4W	1
R027			409HB721	R/CARBON 100K 5% 1/4W	1
R017			40950024	R/METAL 4.93K 1/4W 0.1%	1
R015			409B2185	R/CARBON 3.3K 5% 1/4W	1
		***	CAPACITORS ***		
C005	C010		421A0425	C/CERAMIC 50V 0.01UF	2
C002			421A0429	C/CERAMIC 50V 0.022UF	1
C003			42142183	C/CERAMIC 25V 0.01UF	1
C021	C022	C023	423A1045	C/CERAMIC 50V 100PF	3
C006	C007		423A1101	C/CERAMIC 50V 470PF	2
C009	C011	C024	430A8109	C/ELEC 16V 10UF	4
C025					
C008			430A8130	C/ELEC 50V 3.3UF	1
C001	C004		430A8131	C/ELEC 50V 4.7UF	2

MODEL : POWER UNIT PWB ASSY

SYMBOL			PARTS NO	DESCRIPTION	QTY
		***	ICS ***		
IC601			371C1198	UPC7812H (REG)	1
		***	TRANSISTORS ***		
TR603	TR605		35562648	TR/2SD1275 P/Q	2
		***	DIODES ***		
D005	D006	D007	36003961	DIODE 1CE2N(FORMING)	4
D008					
D001	D002	D003	36902109	DIODE 30D2FC	4
D004					
		***	TRANSFORMERS ***		
PT001			45066206	POWER TRANSFORMER	1
		***	RELAYS & SWITCHES ***		
			65904472	POWER SW EST15709V	1
		***	PWB ASSYS ***		
			81423S01	POWER SUPPLY PWB ASSY	1
		***	ELECTRICAL PARTS & MISCALLENEOUS PARTS		***
F101			66671003	FUSE1A T 250V SEMKO 20MM	1
F001			66671022	FUSE3.15AT250V SEMKO 20MM	1
			71903045	HOLDER/FUSE	4
		***	APPEARANCE PARTS ***		
			16875531	SCREW M3*8*15BF	2
			16876081	SCREW STB3*8*15BF	1
A010			18292501	CLAMPER WIRE	1
		***	CAPACITORS ***		
C001	C002		42019575	C/CERAMIC 500V 0.01UF	2
C612			42199001	C/CERAMIC 50V 0.1UF	1
C101			42899021	C/METAL FILM 250V 0.022UF	1
C613			439J3024	C/ELEC 16V 10UF	1

MODEL : POWER UNIT PWB ASSY

SYMBOL		PARTS NO	DESCRIPTION	QTY
C003		43910149	C/ELEC 10000UF 25V	1
C007		43910150	C/ELEC 4700UF 25V	1
C006		43993056	C/ELEC 35V 470UF	1
C004	C005	43993083	C/ELEC 63V 220UF	2
PC01		70803027	POWER CORD (CEE)	1

MODEL : MECHANISM ASSEMBLY

SYMBOL	PARTS NO	DESCRIPTION	QTY
B074	36904255	LED GL450	1
B070	65907086	REC SAFETY SW.	1
B076	65907087	CASSETTE IN SW.	1
B059	82417BC1	TU. SLANT BASE SASSY	1
B060	82417PA1	ACE HEAD SASSY	1
B077	82423AH1	ROTARY DRUM SASSY (PAL2H)	1
B072	79501073	FE HEAD	1
B055	79502062	CAPSTAN MOTOR	1
B056	79762067	BRAKE SOL ASSY	1
B001	16177842	TENTION REG. ARM ASSY	1
B002	16177851	TENSION BAND ASSY	1
B071	16177861	IP ROLLER ASSY	1
B003	16177871	S. SOFT BRAKE ARM ASSY	1
B004	16177881	TU. SOFT BRAKE ARM ASSY	1
B005	16177922	LOADING UP ASSY	1
B006	16177932	LOADING LOW ASSY	1
B007	16178002	C.BRAKE ASSY	1
B008	16178041	R. SOFT BRAKE ASSY	1
B009	16178051	TU. REEL DISK ASSY	1
B010	16178061	S. REEL DISK ASSY	1
B011	16178173	R.DRIVE ASSY	1
	16178193	BASE PLATE ASSY	1
B066	16178361	PINCH ARM UNIT ASSY	1
B013	16178371	BRAKE ARM(R) ASSY	1
B014	16178381	BRAKE ARM(L) ASSY	1
B015	16178392	MODE GEAR ASSY	1
B016	16178413	REVERSE ARM ASSY	1
B017	16178421	REVERSE DRIVE ARM ASSY	1
B069	16178453	MODE CAM ASSY	1
B067	16178483	PINCH RINK PLATE ASSY	1
B018	16287641	NUT	4
B019	16287921	MINI CLAMP	1
B029	16534121	COLLAR	2
B030	16534231	FRANGE	4
B031	16534251	COLLER	2
B032	16534262	PIN	1
B040	16574771	LEVER SPRING	1
B033	16578692	SPRING	1
B034	16578701	SPRING	1
B035	16578921	SPRING	1
B036	16578941	SPRING	1
B037	16578972	GUIDE PIN SPRING	2
B038	16579011	SPRING	1
B039	16579021	SPRING	1

MODEL : MECHANISM ASSEMBLY

SYMBOL	PARTS NO	DESCRIPTION	QTY
B041	16579041	SPRING	1
B042	16579172	SPRING	1
B068	16579261	PINCH LINK SP.PLATE	2
B045	16627851	SPACER 2*4*0.5T	1
B046	16628731	SPACER	2
B047	16629291	SLIT WASHER	1
	16875531	SCREW M3*8*15BF	1
B053	16876761	SCREW,WS M2.6*6*15BF	3
B057	82423AA1	HEAD DRUM SASSY(PAL2HEAD)	1
B020	16442101	GUIDE ROLLER	6
B021	16442111	GUIDE ROLLER HOLDER	3
B022	16442121	GEAR (1)	1
B023	16442131	GEAR (2)	1
B024	16442161	DRIVE BELT	1
B025	16442211	LEVER	1
B026	16442222	LEVER	1
B027	16443362	GEAR	1
B073	16443513	LED HOLDER	1
B028	16444372	G.P CAP	1
B044	16579911	SPRING (REV.APM)	1
B049	16629382	SLIT WASHER	2
B050	16629392	SLIT WASHER	1
B051	16629412	SLIT WASHER	2
B052	16629422	SLIT WASHER	1
	16629601	UL TUBE	1
B048	16629661	SLIT WASHER	1
B075	72377261	PWB LED PWV-726	1
B058	82417BB1	S. SLANT BASE SASSY	1
B061	82417PM1	MODE SENSOR SASSY	1
B062	82417PR1	REEL SENSOR SASSY	1
B012	16178301	EARTH PLATE S.A.	1
B043	16579351	SPRING (C)	1

MODEL : CHASSES ASSEMBLY

SYMBOL	PARTS NO	DESCRIPTION	QTY
	*** PWB ASSYS ***		
	81417W01	EVER 5V TR SASSY	1
	81417Z01	DRUM JANCTION SASSY	1
PAC2	81423D01	SYS/SER/AUD/REG ASSY	1
	81423S01	POWER SUPPLY PWB ASSY	1
PAC5	81424K01	FUNCTION PWB ASSY	1
PAC1	81437E01	VIDEO PWB ASSY	1
PAC3	81437E01	TUNER/IF PWB ASSY	1
PA04	81437F01	TIMER PWB ASSY	1
PAC6	81437R01	POWER UNIT PWB ASSY	1
A001	16178801	FRONT PANEL ASSY	1
A002	16375771	Top Cover	1
A003	16441621	Preset Cover	1
A004	16443832	FRONT COVER	1
A005	16475651	TRACKING KNOB	1
A006	16573831	FRONT COVER SPRING	1
A007	16628531	SHEET	1
A008	74900791	KNOB,FINE TUNING	1
A009	16177653	CASSETTE HOUSE ASSY	1
A010	18292501	CLAMPER WIRE	1

MODEL : CASSETTE HOUSING ASSEMBLY

SYMBOL	PARTS NO	DESCRIPTION	QTY
A301	16441731	Loading belt	1
A302	35290300	Photo TR PT352	2
A303	65330045	Tact Switch	2
A304	79502029	DC Micro motor RF-280R-10350	1
A305	67012024	Cassette house lamp N901	1
A306	16573761	Mirror	1
A307	16441741	Hinge	1

MODEL : REMOTE CONTROL UNIT

SYMBOL	PARTS NO	DESCRIPTION	QTY
SW1	18921351	MT Switch	9
U001	18924611	Plate	1
U002	18921301	Case (A)	1
U005	18921331	Key to rubber (A)	1
U003	18921341	Key to rubber (B)	7
U004	79VO5164	Key to rubber (B)	1
U006	79VO5166	Cord	1
U007	18921311	Case (B)	1

65913568 WIRED REMOTE CONTROL UNIT RB-90EP

SECTION 8
ELECTRICAL PARTS LIST BY ASSEMBLIES (850611)

(N9014G)

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MODEL : SYS/SER/AUD/REG PWB

SYMBOL			PARTS NO	DESCRIPTION	QTY
		*** ICS ***			
IC502			37101238	UPC1514CA(AUDIO)	1
IC501			37101239	UPC1513HA(SWITCH)	1
IC303			37101241	IC BA4558	1
IC104			37101246	IC BA6993	1
IC101	IC102		37151241	IC BA6209	2
IC301			37151243	MOS UPD6111	1
IC103			37151252	MOS UPD7538C-077(SYSCON)	1
		*** TRANSISTORS ***			
TR301	TR302	TR308	355D1931	TR 2SC2785(E,F,H,J)AT	18
TR309	TR310	TR311			
TR314	TR315	TR317			
TR321	TR322	TR325			
TR326	TR327	TR604			
TR606	TR607	TR608			
TR101	TR103	TR104	355D2710	DTC 124ES AT	8
TR105	TR109	TR110			
TR111	TR313				
TR312	TR323	TR329	355D2711	DTC 144ES AT	5
TR602	TR609				
TR108	TR316	TR319	355K1131	2SA1175 (E,F,H,J),AT	5
TR320	TR324				
TR601			35501216	TR,2SB772(P)	1
TR502			35520340	2SB641 F,G,P	1
TR501			35542709	DTC 114ES	1
TR503			35562144	TR,2SD638 R,S	1
TR107			35562518	TR 2SD1227M R	1
TR106			35562718	TR 2SD1228M(R)	1
		*** DIODES ***			
D102	D103	D106	360KC955	SILICON DIODE,RV35V	13
D115	D301	D302			
D303	D306	D307			
D308	D313	D314			
D501					
D304	D305		36001527	DIODE 1SS53	2
D309			36003102	DIODE RD-16EE3	1
D101			36003112	DIODE,RD9.1EB-3	1
D107	D108		36902060	DIODE 10E2(FORMING)	2
		*** VARIABLE RESISTORS ***			
VR503			41951142	R,VARIABLE 1.0K,B	1
VR306			41951144	R,VARIABLE 2.2K,B	1

MODEL : SYS/SER/AUD/REG PWB

SYMBOL			PARTS NO	DESCRIPTION	QTY
VR502			41951149	R,VARIABLE 15K,B	1
VR303	VR304		41951152	R,VARIABLE 47K,B	2
VR305			41951156	R,VARIABLE 220K,B	1
VR302			41951158	R,VARIABLE 470K,B	1
VR501			41951160	R,VARIABLE 1.0M,B	1
VR301			41953007	VR500KB(CT)	1
		*** RELAYS & SWITCHES ***			
SW301			65180023	SWITCH SLIDE	1
		*** COILS & FILTERS ***			
RA101			39906012	R,BLOCK 100K,P*5,1/8W	1
L101			61052029	COIL,FILTER 100UH	1
L503			61052038	COIL,FILTER 560UH	1
L301			61052041	COIL,FILTER 1000UH	1
L501			61091014	FILTER COIL 183	1
L502			61C91020	FILTER COIL 222	1
T501			61815152	BIAS OSC TRANS	1
		*** ELECTRICAL PARTS & MISCALLENEOUS PARTS			***
X101			39080016	CERAMIC RESONATOR 400KHZ	1
X301			64004134	X,TAL 4.43MHZ	1
		*** RESISTORS ***			
R514			401KE613	R,CARBON 3.3H 5% 1/6W	1
R500	R512		401KE625	R,CARBON 10H 5% 1/6W	2
R360			401KE641	R,CARBON 47H 5% 1/6W	1
R509			401KE647	R,CARBON 82H 5% 1/6W	1
R523	R527		401KE649	R,CARBON 100H 5% 1/6W	2
R505			401KE657	R,CARBON 220H 5% 1/6W	1
R306			401KE659	R,CARBON 270H 5% 1/6W	1
R146			401KE661	R,CARBON 330H 5% 1/6W	1
R160	R393	R403	401KE665	R,CARBON 470H 5% 1/6W	7
R409	R529	R603			
R608					
R144	R164	R388	401KE673	R,CARBON 1.0K 5% 1/6W	10
R398	R404	R517			
R605	R610	R614			
R615					
R522			401KE679	R,CARBON 1.8K 5% 1/6W	1
R172	R309	R317	401KE681	R,CARBON 2.2K 5% 1/6W	8
R336	R342	R394			
R408	R613				

MODEL : SYS/SER/AUD/REG PWB

SYMBOL			PARTS NO	DESCRIPTION	QTY
R105	R106	R112	401KE685	R/CARBON 3.3K 5% 1/6W	19
R113	R114	R115			
R116	R117	R118			
R123	R124	R125			
R126	R127	R128			
R130	R132	R150			
R153					
R376	R377	R502	401KE687	R/CARBON 3.9K 5% 1/6W	4
R519					
R612			401KE688	R/CARBON 4.3K 5% 1/6W	1
R142	R332	R414	401KE689	R/CARBON 4.7K 5% 1/6W	6
R416	R420	R423			
R385	R510	R520	401KE691	R/CARBON 5.6K 5% 1/6W	5
R607	R611				
R351	R606		401KE692	R/CARBON 6.2K 5% 1/6W	2
R383			401KE693	R/CARBON 6.8K 5% 1/6W	1
R350	R397		401KE695	R/CARBON 8.2K 5% 1/6W	2
R104	R107	R108	401KE697	R/CARBON 10K 5% 1/6W	16
R109	R131	R135			
R137	R154	R330			
R359	R373	R374			
R390	R410	R417			
R466					
R387	R396		401KE699	R/CARBON 12K 5% 1/6W	2
R141	R380	R381	401KE701	R/CARBON 15K 5% 1/6W	3
R386			401KE703	R/CARBON 18K 5% 1/6W	1
R143	R361	R369	401KE705	R/CARBON 22K 5% 1/6W	9
R412	R421	R441			
R504	R507	R513			
R503			401KE706	R/CARBON 24K 5% 1/6W	1
R508			401KE707	R/CARBON 27K 5% 1/6W	1
R310	R311	R312	401KE709	R/CARBON 33K 5% 1/6W	12
R362	R363	R364			
R365	R366	R391			
R392	R406	R424			
R157	R158	R307	401KE713	R/CARBON 47K 5% 1/6W	32
R308	R315	R316			
R318	R319	R334			
R335	R337	R338			
R340	R341	R343			
R344	R353	R354			
R355	R356	R357			
R358	R370	R371			
R372	R375	R395			
R411	R418	R419			
R462	R511				
R402			401KE714	R/CARBON 51K 5% 1/6W	1
R501	R521		401KE715	R/CARBON 56K 5% 1/6W	2
R145	R147	R153	401KE721	R/CARBON 100K 5% 1/6W	5
R159	R320	R401			
R415	R601				

MODEL : SYS/SEP/AUD/REG PWB

SYMBOL			PARTS NO	DESCRIPTION	QTY
R352	R379		401KE723	R/CARBON 120K 5% 1/6W	2
R101	R102	R422	401KE729	R/CARBON 220K 5% 1/6W	3
R516			401KE731	R/CARBON 270K 5% 1/6W	1
R407			401KE733	R/CARBON 330K 5% 1/6W	1
R155			401KE739	R/CARBON 560K 5% 1/6W	1
R313	R382		401KE743	R/CARBON 820K 5% 1/6W	2
R333	R389	R400	401KE745	R/CARBON 1.0M 5% 1/6W	6
R405	R413	R506			
R463			40105213	R/CARBON 47K 5% 1/6W	1
R530			40105715	R/CARBON 56K 5% 1/6W	1
R103			40121661	R/CARBON 330H 5% 1/2W	1
R173			40351109	R/METAL 2.2H 5% 1W	1
R302			40399006	R/METAL 0.47H 5% 1W	1
R515			409HB657	R/CARBON 220H 5% 1/4W	1
R616			409HB683	R/CARBON 2.7K 5% 1/4W	1
R110	R111	R121	409HB685	R/CARBON 3.3K 5% 1/4W	6
R134	R149	R161			
R162	R304	R331	409HB697	R/CARBON 10K 5% 1/4W	3
R329	R367		409HB709	R/CARBON 33K 5% 1/4W	2
R151			409HB721	R/CARBON 100K 5% 1/4W	1
R368			409HB743	R/CARBON 820K 5% 1/4W	1
R321	R339		409HB745	R/CARBON 1.0M 5% 1/4W	2
R346			409HB749	R/CARBON 1.5M 5% 1/4W	1
R323	R347		409HB753	R/CARBON 2.2M 5% 1/4W	2
R322			409HB761	R/CARBON 4.7M 5% 1/4W	1
R602			40912181	R/CARBON 2.2K 5% 1/2W	1
R301			40913109	R/CARBON 2.2H 5% 1/4W	1
R528			40913125	R/CARBON 10H 5% 1/4W	1
R303			40913141	R/CARBON 47H 5% 1/4W	1
R399			40983173	R/CARBON 1.0K 5% 1/4W	1
R604	R609		40983177	R/CARBON 1.5K 5% 1/4W	2
		***	CAPACITORS	***	
C602	C606		421A0417	C/CERAMIC 50V 2200PF	2
C101	C104	C116	421A0425	C/CERAMIC 50V 0.01UF	4
C304					
C502			421C0206	C/CERAMIC 50V 270PF	1
C333			421C0209	C/CERAMIC 50V 470PF	1
C501			421C0213	C/CERAMIC 50V 1000PF	1
C119			42110925	C/CERAMIC 50V 0.01UF	1
C331			42130225	C/CERAMIC 50V 0.01UF	1
C102	C103		42199002	C/CERAMIC 50V 0.1UF	2
C315			423A1015	C/CERAMIC 50V 10PF	1
C323			423A1029	C/CERAMIC 50V 22PF	1
C306	C311	C316	423A1037	C/CERAMIC 50V 47PF	4

MODEL : SYS/SEP/AUD/REG PWB

SYMBOL			PARTS NO	DESCRIPTION	QTY
C319			423A1037	C,CERAMIC 50V 47PF	4
C105	C106	C107	423A1045	C,CERAMIC 50V 100PF	6
C108	C109	C607			
C113	C512		423A1057	C,CERAMIC 50V 330PF	2
C110	C111		423A1101	C,CERAMIC 50V 470PF	2
C339			42311053	C,CERAMIC 50V 220PF	1
C360	C361		42312061	C,CERAMIC 50V 15PF	2
C523			429G6501	C,FILM 50V 1000PF 5%	1
C307	C308	C309	429G6505	C,FILM 50V 2200PF 5%	3
C365	C514	C528	429G6513	C,FILM 50V 0.010UF 5%	3
C345			429G6514	C,FILM 50V 0.012UF 5%	1
C515	C519		429G6515	C,FILM 50V 0.015UF 5%	2
C312	C313		429G6516	C,FILM 50V 0.018UF 5%	2
C317	C318		429G6519	C,FILM 50V 0.033UF 5%	2
C320	C321		429G6522	C,FILM 50V 0.056UF 5%	2
C344			429G6523	C,FILM 50V 0.068UF 5%	1
C334	C506		429G6524	C,FILM 50V 0.082UF 5%	2
C513			42974167	C,FILM 100V 0.056UF 5%	1
C326			42978057	C FILM 50V 0.1UF	1
C611			42978061	C FILM 50V 0.15UF	1
C346			42978065	C FILM 50V 0.22UF	1
C604	C608	C609	430A8113	C,ELEC 16V 100UF	4
C610					
C601	C605		430A8118	C,ELEC 25V 47UF	2
C516			43018113	C,ELEC 16V 100UF	1
C504			439H0053	C,ELEC 50V 1.0UF	1
C517			439H0055	C,ELEC 50V 2.2UF	1
C327			439J3014	C,ELEC 10V 47UF	1
C303	C503		439J3015	C,ELEC 10V 100UF	2
C329	C508		439J3025	C,ELEC 16V 22UF	2
C511	C518		439J3026	C,ELEC 16V 33UF	2
C302	C521		439J3040	C,ELEC 25V 47UF	2
C509	C510	C522	439J3060	C,ELEC 50V 1.0UF	3
C117	C343		439J3062	C,ELEC 50V 3.3UF	2
C114	C325	C363	439J3063	C,ELEC 50V 4.7UF	3
C115	C314	C328	439J3064	C,ELEC 50V 10UF	14
C330	C332	C335			
C336	C337	C338			
C340	C341	C342			
C505	C524				
C347			439J3102	C,ELEC 50V 0.1UF	1
C364			43993006	C,ELEC 6.3V 470UF	1
C301			43993044	C,ELEC 25V 470UF	1

MODEL : FUNCTION PWB ASSY

SYMBOL			PARTS NO	DESCRIPTION	QTY
		*** TRANSISTORS ***			
TR001	TR002	TR003	35542709	DTC 114ES	3
		*** DIODES ***			
D010			360KA527	DIODE 1SS53	1
D001	D002	D003	360KC955	SILICON DIODE,RV35V	12
D004	D005	D006			
D007	D008	D009			
D011	D012	D013			
LED002	LED004		36904277	LED GRN SLH-34MC	2
LED006			36904278	LED RED SLH-34VC	1
LED001	LED003	LED005	36904279	LED UMB SLH-34DC	3
		*** RELAYS & SWITCHES ***			
SW001	SW002	SW003	65330052	TACT SWITCH	8
SW004	SW005	SW006			
SW007	SW008				
		*** RESISTORS ***			
R007			401KE697	R,CARBON 10K 5% 1/6W	1
R002	R004		409HB646	R,CARBON 75H 5% 1/4W	2
R003	R005	R006	409HB653	R,CARBON 150H 5% 1/4W	3
R001			409HB669	R,CARBON 680H 5% 1/4W	1

MODEL : VIDEO PWB ASSY

SYMBOL			PARTS NO	DESCRIPTION	QTY
		***	CRT & TUNER ***		
			34353001	RF CONV.(PAL.BG)	1
		***	ICS ***		
IC203			37101244	IC HA178M06P	1
IC201			37101248	HA11811ANT (CHROMA)	1
IC202			37101249	BA7025L (SECAM DET)	1
IC004			37101250	IC BA7026L	1
IC001			37151235	AN6306(Y-REC)	1
IC002			37151236	AN6337(Y-PB)	1
IC003			37151238	AN6326N(HEAD AMP)	1
		***	TRANSISTORS ***		
TRC09	TRC10	TRC15	355D1931	TR 2SC2785(E,F,H,J)AT	14
TRC16	TRC17	TRC18			
TRC19	TRC28	TR202			
TR205	TR206	TR207			
TR208	TR209				
TRC01	TRC04	TRC11	355D2710	DTC 124ES AT	9
TRC21	TRC23	TRC27			
TRC29	TR204	TR213			
TRC02	TRC03	TRC05	355K1131	2SA1175 (E,F,H,J),AT	7
TRC06	TRC26	TR203			
TR210					
TR201	TR212		355K2107	TR,UN4112,AT (22K)	2
TRC14			35502442	TR 2SA874 Q,R	1
TRC22	TRC24		35520344	TR.2SB641 R,S	2
TR217			35542710	DTC 124ES	1
TRC13			35543042	TR 2SC1652 Q,R	1
TRC12			35543304	TR 2SC2377 D	1
		***	DIODES ***		
D201	D204		360KC955	SILICON DIODE,RV35V	2
D001	D002	D202	36001527	DIODE 1SS53	4
D2C3					
ZD001			36003091	DIODE,ZENER RD3.3EB	1
D205			36902080	DIODE 10E2(FORMING)	1
		***	VARIABLE RESISTORS ***		
VR007	VR008	VR009	41951142	R,VARIABLE 1.0K,B	5
VR203	VR204				
VRC06			41951146	R,VARIABLE 4.7K,B	1

MODEL : VIDEO PWB ASSY

SYMBOL			PARTS NO	DESCRIPTION	QTY
VR001	VR002	VR003	41951148	R,VARIABLE 10K,B	8
VR005	VR201	VR202			
VR205	VR206				
VRC04			41951150	R,VARIABLE 22K,B	1
		***	COILS & FILTERS ***		
L021			610G1510	FILTOR COIL 2.2UH (S)	1
L009	L010		610G1511	FILTER COIL 3.3UH AT (S)	2
L001	L004	L005	610G1529	FILTER COIL 100UH AT (S)	12
L006	L012	L016			
L026	L027	L203			
L209	L210	L212			
L018			610G1541	FILTER COIL 1000UH AT(S)	1
L011	L015	L024	610G1619	FILTER COIL 15UH AT (S)	5
L025	L205				
L020			610G1621	FILTER COIL 22UH AT (S)	1
L023			610G1624	FILTER COIL 39UH AT (S)	1
L008			610G1626	FILTER COIL 56UH AT (S)	1
L013			610G1628	FILTER COIL 82UH AT (S)	1
L014	L022		610G1631	FILTER COIL 150UH AT (S)	2
L003			610G1632	FILTER COIL 180UH AT (S)	1
L019			610G1637	FILTER COIL 470UH AT (S)	1
L206			610G1640	FILTER COIL 820UH (S)	1
L202			61071529	FILTER COIL 100UH (S)	1
L208			61071634	COIL,FILTER 270UH(S)	1
L207			61072217	COIL,FILTER 2.2MH	1
L204			61072224	COIL,FILTER 8.2MH	1
FL206			61137009	CERAMIC FILTER 4.16MHZ	1
DL001			61551048	DELAY LINE 1H	1
DL201			61551049	DELAY LINE 2H	1
FL201			61827005	L.P.F. (PB CHROMA)	1
FL001			61827028	L.P.F 3.2MHZ	1
FL002			61827029	L.P.F 4.0MHZ	1
FL203			61827031	B.P.F 4.4.MHZ	1
FL204			61827032	L.P.F 1.5MHZ	1
FL205			61827033	B.P.F 5.06MHZ	1
FL202			61828012	EQ.FILTER (CHROMA)	1
FL003			61828013	RF EQ.FILTER (PAL)	1
L211			61828014	LC FILTER (8KHZ TRAP)	1
		***	ELECTRICAL PARTS & MISCALLENEOUS PARTS		***
C078	C079		44209014	C,TRIMMER 60PF	2
X201			64004130	X'TAL 4.433MHZ	1
X202			64004131	X'TAL BLOCK 4.435MHZ	1
			71128517	ANT.TERMINAL BOARD(K,G,E)	1

MODEL : VIDEO PWB ASSY

SYMBOL			PARTS NO	DESCRIPTION	QTY
		***	RESISTORS	***	
R081	R083	R117	401KE625	R,CARBON 10H 5% 1/6W	3
R077	R078	R091	401KE643	R,CARBON 56H 5% 1/6W	3
R062			401KE645	R,CARBON 68H 5% 1/6W	1
R104	R105		401KE646	R,CARBON 75H 5% 1/6W	2
R066			401KE647	R,CARBON 82H 5% 1/6W	1
R041	R073		401KE649	R,CARBON 100H 5% 1/6W	2
R058			401KE652	R,CARBON 130H 5% 1/6W	1
R057	R060	R074	401KE653	R,CARBON 150H 5% 1/6W	3
R072			401KE655	R,CARBON 180H 5% 1/6W	1
R021			401KE657	R,CARBON 220H 5% 1/6W	1
R061	R097		401KE659	R,CARBON 270H 5% 1/6W	2
R026	R088	R108	401KE661	R,CARBON 330H 5% 1/6W	7
R209	R216	R221			
R256					
R017	R030	R059	401KE665	R,CARBON 470H 5% 1/6W	5
R067	R210				
R064			401KE667	R,CARBON 560H 5% 1/6W	1
R090	R208	R242	401KE669	R,CARBON 680H 5% 1/6W	4
R243					
R071			401KE671	R,CARBON 820H 5% 1/6W	1
R002	R003	R024	401KE673	R,CARBON 1.0K 5% 1/6W	20
R033	R044	R093			
R095	R109	R214			
R224	R225	R226			
R231	R232	R237			
R238	R239	R240			
R252	R260				
R009	R032	R069	401KE675	R,CARBON 1.2K 5% 1/6W	12
R098	R205	R211			
R218	R223	R229			
R241	R244	R258			
R012	R022	R031	401KE677	R,CARBON 1.5K 5% 1/6W	10
R086	R087	R096			
R101	R103	R217			
R219					
R035	R037	R089	401KE679	R,CARBON 1.8K 5% 1/6W	3
R259			401KE680	R,CARBON 2.0K 5% 1/6W	1
R007	R008	R036	401KE681	R,CARBON 2.2K 5% 1/6W	7
R063	R116	R215			
R251					
R079	R082		401KE683	R,CARBON 2.7K 5% 1/6W	2
R106	R212	R228	401KE685	R,CARBON 3.3K 5% 1/6W	3
R010	R016	R039	401KE687	R,CARBON 3.9K 5% 1/6W	3
R006	R112	R203	401KE689	R,CARBON 4.7K 5% 1/6W	6
R220	R235	R236			
R004	R025	R056	401KE691	R,CARBON 5.6K 5% 1/6W	4

MODEL : VIDEO PWB ASSY

SYMBOL			PARTS NO	DESCRIPTION	QTY
R249			401KE691	R,CARBON 5.6K 5% 1/6W	4
R018	R068	R075	401KE693	R,CARBON 6.8K 5% 1/6W	5
R076	R233				
J043	R015	R084	401KE697	R,CARBON 10K 5% 1/6W	8
R085	R094	R110			
R230	R246				
R114	R245		401KE701	R,CARBON 15K 5% 1/6W	2
R001	R055		401KE703	R,CARBON 18K 5% 1/6W	2
R028	R029	R100	401KE705	R,CARBON 22K 5% 1/6W	6
R102	R201	R253			
R113	R207	R227	401KE713	R,CARBON 47K 5% 1/6W	3
R023			401KE715	R,CARBON 56K 5% 1/6W	1
R213	R257		401KE721	R,CARBON 100K 5% 1/6W	2
R206			401KE723	R,CARBON 120K 5% 1/6W	1
R250			401KE725	R,CARBON 150K 5% 1/6W	1
R020			401KE729	R,CARBON 220K 5% 1/6W	1
R234			401KE731	R,CARBON 270K 5% 1/6W	1
R222			401KE735	R,CARBON 390K 5% 1/6W	1
R034	R040		401KE739	R,CARBON 560K 5% 1/6W	2
R261			401KE743	R,CARBON 820K 5% 1/6W	1
R042			401KE745	R,CARBON 1.0M 5% 1/6W	1
R119			40105697	R,CARBON 10K 5% 1/6W	1
J052			40105713	R,CARBON 47K 5% 1/6W	1
R115			40982149	R,CARBON 100H 5% 1/4W	1
R019			40982169	R,CARBON 680H 5% 1/4W	1
R204			40982171	R,CARBON 820H 5% 1/4W	1
R005	R045		40982173	R,CARBON 1.0K 5% 1/4W	2
R043			40982175	R,CARBON 1.2K 5% 1/4W	1
R118			40982177	R,CARBON 1.5K 5% 1/4W	1
R080			40982183	R,CARBON 2.7K 5% 1/4W	1
R092			40983167	R,CARBON 560H 5% 1/4W	1
R202			40983201	R,CARBON 15K 5% 1/4W	1
		***	CAPACITORS	***	
C027	C029	C031	421A0425	C,CERAMIC 50V 0.01UF	15
C067	C092	C204			
C205	C207	C211			
C212	C215	C234			
C235	C240	C256			
C032	C077	C080	421A0429	C,CERAMIC 50V 0.022UF	8
C213	C225	C227			
C230	C231				
C070	C071	C072	421A0933	C,CERAMIC 50V 0.047UF	6
C073	C082	C250			
C088	C219		421C0210	C,CERAMIC 50V 560PF	2
C060			421C0212	C,CERAMIC 50V 820PF	1
C110			421C0213	C,CERAMIC 50V 1000PF	1

MODEL : VIDEO PWB ASSY

SYMBOL			PARTS NO	DESCRIPTION	QTY
C117			42110425	C,CERAMIC 50V 0.01UF	1
C010	C025	C045	42141422	C,CERAMIC 50V 0.047UF	7
C063	C209	C252			
C267					
C257			42199001	C,CERAMIC 50V 0.1UF	1
C102			423A1011	C,CERAMIC 50V 6PF	1
C090			423A1027	C,CERAMIC 50V 18PF	1
C030	C100	C106	423A1029	C,CERAMIC 50V 22PF	5
C111	C229				
C115			423A1031	C,CERAMIC 50V 27PF	1
C056			423A1033	C,CERAMIC 50V 33PF	1
C064			423A1043	C,CERAMIC 50V 82PF	1
C008	C017	C035	423A1047	C,CERAMIC 50V 120PF	3
C084			423A1049	C,CERAMIC 50V 150PF	1
C085	C112		423A1051	C,CERAMIC 50V 180PF	2
C028	C066	C087	423A1053	C,CERAMIC 50V 220PF	3
C002	C004		423A1055	C,CERAMIC 50V 270PF	2
C058			423A1056	C,CERAMIC 50V 300PF	1
C037	C059		423A1100	C,CERAMIC 50V 390PF	2
C104			42311013	C,CERAMIC 50V 8PF	1
C089			42311045	C,CERAMIC 50V 100PF	1
C065			42311051	C,CERAMIC 50V 180PF	1
C086			42311103	C,CERAMIC 50V 430PF	1
C007	C237		42312065	C,CERAMIC 50V 22PF	2
C239			42312067	C,CERAMIC 50V 27PF	1
C018	C026	C238	42312071	C,CERAMIC 50V 39PF	3
C061			429G6501	C,FILM 50V 1000PF 5%	1
C041	C057		429G6502	C,FILM 50V 1200PF 5%	2
C033			429G6505	C,FILM 50V 2200PF 5%	1
C021	C022		429G6506	C,FILM 50V 2700PF 5%	2
C114			429G6507	C,FILM 50V 3300PF 5%	1
C009	C015	C019	429G6513	C,FILM 50V 0.010UF 5%	7
C068	C069	C208			
C232					
C220			429G6515	C,FILM 50V 0.015UF 5%	1
C223	C236		429G6517	C,FILM 50V 0.022UF 5%	2
C001	C221		429G6519	C,FILM 50V 0.033UF 5%	2
C218	C228		429G6521	C,FILM 50V 0.047UF 5%	2
C214			429G6522	C,FILM 50V 0.056UF 5%	1
C226			429G6523	C,FILM 50V 0.068UF 5%	1
C013	C083	C210	430A8107	C,ELEC 10V 47UF	3
C043	C094		430A8109	C,ELEC 16V 10UF	2
C103	C254		430A8111	C,ELEC 16V 33UF	2
C011	C023	C042	430A8112	C,ELEC 16V 47UF	4
C253					
C064	C099		430A8113	C,ELEC 16V 100UF	2
C012	C039		430A8114	C,ELEC 25V 4.7UF	2

MODEL : VIDEO PWB ASSY

SYMBOL			PARTS NO	DESCRIPTION	QTY
C062			430A8118	C,ELEC 25V 47UF	1
C016			430A8125	C,ELEC 50V 0.22UF	1
C020	C034	C036	430A8128	C,ELEC 50V 1UF	4
C038					
C014	C040		430A8129	C,ELEC 50V 2.2UF	2
C046			43018107	C,ELEC 10V 47UF	1
C263			43018112	C,ELEC 16V 47UF	1
C066			43311045	C,ELEC 50V 1UF	1
C091	C251		439J3014	C,ELEC 10V 47UF	2
C105	C201	C202	439J3027	C,ELEC 16V 47UF	7
C203	C259	C260			
C264					
C107	C216		439J3038	C,ELEC 25V 22UF	2
C206			439J3059	C,ELEC 50V 0.47UF	1
C075	C076	C081	439J3060	C,ELEC 50V 1.0UF	4
C222					
C217			439J3062	C,ELEC 50V 3.3UF	1
C074	C224	C258	439J3064	C,ELEC 50V 10UF	3
C044			43993005	C,ELEC 6.3V 330UF	1
C265			43993014	C,ELEC 10V 47UF	1
C262			43993027	C,ELEC 16V 47UF	1
C233			43993063	C,ELEC 50V 4.7UF	1

MODEL : TUNER/IF PWB ASSY

SYMBOL			PARTS NO	DESCRIPTION	QTY
			***	CRT & TUNER ***	
			34383001	U/V TUNER	1
			***	ICS ***	
IC002			37101103	IC UPC1363C (CH SEL)	1
IC001			37101240	IC LA7530	1
			***	TRANSISTORS ***	
TR001	TR002	TR005	355D1931	TR 2SC2785(E,F,H,J)AT	7
TR006	TR007	TR051			
TR052					
TR004	TR008	TR009	355K1131	2SA1175 (E,F,H,J),AT	7
TR010	TR050	TR060			
TR061					
TR003			35541906	TR,2SC2785(F)	1
TR062			35940502	TR,2SC1730 L	1
			***	DIODES ***	
D006	D008	D010	360KA009	DIODE 1S2473 AT26	15
D012	D014	D016			
D018	D020	D022			
D024	D026	D028			
D030	D032	D034			
D002	D003	D004	360KA025	DIODE,1SS133	22
D005	D007	D009			
D011	D013	D015			
D017	D019	D021			
D023	D025	D027			
D029	D031	D033			
D035	D036	D037			
D038					
D001			36003049	DIODE,ZENER MPC-574J	1
			***	VARIABLE RESISTORS ***	
PS001			41098344	TUNING VR 16KEY	1
VR001			41951148	R,VARIABLE 10K,B	1
			***	RELAYS & SWITCHES ***	
SW001			65180009	SLIDE SWITCH	1

MODEL : TUNER/IF PWB ASSY

SYMBOL			PARTS NO	DESCRIPTION	QTY
			***	COILS & FILTERS ***	
L002			61011535	SAW COIL 2R7	1
L061			61072111	COIL,FILTER 1.8UH	1
L003			61072121	COIL FILTER 12UH +-10%	1
L004			61072122	COIL FILTER 15UH +-10%	1
L060			61072128	COIL FILTER 47UH +-10%	1
FL003			61105012	COIL,SIF FILTER 5.5UH	1
FL004			61108004	CERAMIC TRAP 5.5MHZ	1
FL002			61137025	CERAMIC DISCRI S5R5MC4	1
FL001			61138010	FILTER	1
T003			61815131	TRAP COIL	1
T001	T002		61815155	V.IFT (9.5TURN)	2
			***	ELECTRICAL PARTS & MISCALLENEOUS PARTS	***
			70780010	CABLE(210MM)	1
			***	RESISTORS ***	
R070			401KE637	R,CARBON 33H 5% 1/6W	1
R072			401KE641	R,CARBON 47H 5% 1/6W	1
R001	R009		401KE647	R,CARBON 82H 5% 1/6W	2
R071			401KE649	R,CARBON 100H 5% 1/6W	1
R054			401KE653	R,CARBON 150H 5% 1/6W	1
R015			401KE659	R,CARBON 270H 5% 1/6W	1
R006	R064		401KE661	R,CARBON 330H 5% 1/6W	2
R007			401KE663	R,CARBON 390H 5% 1/6W	1
R053			401KE667	R,CARBON 560H 5% 1/6W	1
R014	R069		401KE669	R,CARBON 680H 5% 1/6W	2
R033	R036	R060	401KE673	R,CARBON 1.0K 5% 1/6W	5
R062	R063				
R003	R005	R061	401KE681	R,CARBON 2.2K 5% 1/6W	4
R074					
R004	R038		401KE685	R,CARBON 3.3K 5% 1/6W	2
R065			401KE689	R,CARBON 4.7K 5% 1/6W	1
R040	R042	R044	401KE691	R,CARBON 5.6K 5% 1/6W	3
R066			401KE693	R,CARBON 6.8K 5% 1/6W	1
R017			401KE695	R,CARBON 8.2K 5% 1/6W	1
R019	R025	R026	401KE697	R,CARBON 10K 5% 1/6W	5
R028	R050				
R073			401KE699	R,CARBON 12K 5% 1/6W	1
R016			401KE701	R,CARBON 15K 5% 1/6W	1
R058			401KE703	R,CARBON 18K 5% 1/6W	1
R034			401KE707	R,CARBON 27K 5% 1/6W	1

MODEL : TUNER/IF PWB ASSY

SYMBOL			PARTS NO	DESCRIPTION	QTY
R011	R027	R051	401KE709	R,CARBON 33K 5% 1/6W	3
R029	R030	R031	401KE713	R,CARBON 47K 5% 1/6W	9
R039	R041	R043			
R055	R056	R057			
R013			401KE717	R,CARBON 68K 5% 1/6W	1
R024			401KE721	R,CARBON 100K 5% 1/6W	1
R052			401KE737	R,CARBON 470K 5% 1/6W	1
R045			401KE745	R,CARBON 1.0M 5% 1/6W	1
R067			409HB665	R,CARBON 470H 5% 1/4W	1
R020	R021		409HB681	R,CARBON 2.2K 5% 1/4W	2
R012			409HB697	R,CARBON 10K 5% 1/4W	1
R037			409HB705	R,CARBON 22K 5% 1/4W	1
R032			409HB713	R,CARBON 47K 5% 1/4W	1
R035			409HB721	R,CARBON 100K 5% 1/4W	1
R023			409HB729	R,CARBON 220K 5% 1/4W	1
R018			40913117	R,CARBON 4.7H 5% 1/4W	1
R046	R059		40913125	R,CARBON 10H 5% 1/4W	2
R068			40913137	R,CARBON 33H 5% 1/4W	1
R022			40982237	R,CARBON 470K 5% 1/4W	1
		***	CAPACITORS	***	
C065	C066		421A0417	C,CERAMIC 50V 2200PF	2
C006	C009	C012	421A0425	C,CERAMIC 50V 0.01UF	5
C018	C063				
C023	C024		421C0209	C,CERAMIC 50V 470PF	2
C064			421C0213	C,CERAMIC 50V 1000PF	1
C001	C002		421D8133	C,CERAMIC 25V 0.01UF	2
C014			42130725	C,CERAMIC 50V 0.01UF	1
C052			42181397	C,CERAMIC 50V 0.022UF	1
C007			423A1035	C,CERAMIC 50V 39PF	1
C060			423A1041	C,CERAMIC 50V 68PF	1
C003	C004		423A2039	C,CERAMIC 50V 56PF	2
C061			423A3029	C,CERAMIC 50V 18PF	1
C016			429G6515	C,FILM 50V 0.015UF 5%	1
C025			429G6519	C,FILM 50V 0.033UF 5%	1
C021			439H0047	C,ELEC 50V 0.1UF	1
C022			439H0051	C,ELEC 50V 0.47UF	1
C013			439H0055	C,ELEC 50V 2.2UF	1
C019	C026		439J3024	C,ELEC 16V 10UF	2
C062			439J3025	C,ELEC 16V 22UF	1
C008	C027		439J3027	C,ELEC 16V 47UF	2
C005	C053		439J3028	C,ELEC 16V 100UF	2
C017	C050		439J3060	C,ELEC 50V 1.0UF	2
C015	C051		439J3062	C,ELEC 50V 3.3UF	2
C020			439J3067	C,ELEC 50V 47UF	1

MODEL : TIMER PWB ASSY

SYMBOL			PARTS NO	DESCRIPTION	QTY
		***	ICS	***	
IC003			37101203	IC UPC1473HA	1
IC002			37151191	MOS TMS1751-M47C2C	1
IC001			37151253	MOS UPD7538C-078(TIMER)	1
		***	TRANSISTOPS	***	
TR001			355D1931	TR 2SC2785(E,F,H,J)AT	1
TR001	TR002		355D2710	DTC 124ES AT	2
TR002	TR004		355K2108	TR,UN4213,AT (47K)	2
TR003			35541931	TR,2SC2785(E,F,H,J)	1
		***	DIODES	***	
D007	D015	D023	360KA527	DIODE 1SS53	4
D027					
D001	D002	D006	360KC955	SILICON DIODE,RV35V	17
D009	D010	D011			
D012	D013	D014			
D016	D017	D018			
D019	D024	D026			
D029	D030				
D003			36003112	DIODE,RD9.1EB-3	1
D028	D032		36003955	SILICON DIODE RV35V	2
D004			36E03003	DIODE,PHOTO PH302	1
		***	RELAYS & SWITCHES	***	
SW001	SW002	SW003	65330052	TACT SWITCH	14
SW005	SW006	SW007			
SW008	SW009	SW010			
SW011	SW012	SW013			
SW014	SW015				
		***	COILS & FILTERS	***	
L002			61052041	COIL,FILTER 1000UH	1
		***	PWB ASSYS	***	
			81417N01	TIMER-SUB PWB ASSY	1
		***	ELECTRICAL PARTS & MISCALLENEOUS PARTS		***
X002			39080012	CERAMIC RESO. CSB500E5	1
X001			39080016	CERAMIC RESONATOR 400KHZ	1

MODEL : TIMER PWB ASSY

SYMEOL			PARTS NO	DESCRIPTION	QTY
FIP1			67930036	FIP8HM7	1
		***	RESISTORS	***	
RC16			401KE633	R/CARBON 22H 5% 1/6W	1
R021			401KE657	R/CARBON 220H 5% 1/6W	1
R017			401KE673	R/CARBON 1.0K 5% 1/6W	1
R006	R020		401KE681	R/CARBON 2.2K 5% 1/6W	2
R009	R010	R011	401KE685	R/CARBON 3.3K 5% 1/6W	7
R012	R013	R014			
R015					
R019			401KE689	R/CARBON 4.7K 5% 1/6W	1
R002	R005		401KE697	R/CARBON 10K 5% 1/6W	2
R022			401KE709	R/CARBON 33K 5% 1/6W	1
R007			401KE713	R/CARBON 47K 5% 1/6W	1
R001	R008		401KE717	R/CARBON 68K 5% 1/6W	2
R001	R003	R027	401KE721	R/CARBON 100K 5% 1/6W	5
R028	R029				
R018			401KE745	R/CARBON 1.0M 5% 1/6W	1
R004			409HB696	R/CARBON 9.1K 5% 1/4W	1
R023			409HB721	R/CARBON 100K 5% 1/4W	1
		***	CAPACITORS	***	
C003	C005	C019	421A0425	C/CERAMIC 50V 0.01UF	3
C002			421A0429	C/CERAMIC 50V 0.022UF	1
C016			4211G425	C/CERAMIC 50V 0.01UF	1
C017	C018	C021	423A1045	C/CERAMIC 50V 100PF	5
C022	C023				
C006	C007		423A1101	C/CERAMIC 50V 470PF	2
C021	C022	C023	42311045	C/CERAMIC 50V 100PF	3
C011			429G6507	C/FILM 50V 3300PF 5%	1
C010			42976519	C/FILM 50V 0.033UF 5%	1
C001	C009		430A8109	C/ELEC 16V 10UF	2
C012	C014		430A8121	C/ELEC 35V 10UF	2
C015			430A8123	C/ELEC 35V 33UF	1
C008			430A8130	C/ELEC 50V 3.3UF	1
C001	C004	C013	430A8131	C/ELEC 50V 4.7UF	3
C020			43991030	C/ELEC 16V 33UF	1

MODEL : POWER UNIT PWB ASSY

SYMBOL			PARTS NO	DESCRIPTION	QTY
		***	ICS	***	
IC601			371C1198	UPC7812H (REG)	1
		***	TRANSISTORS	***	
TR603	TR605		35562648	TR/2SD1275 P/Q	2
		***	DIODES	***	
D005	D006	D007	36003961	DIODE 10E2N(FORMING)	4
D008					
D001	D002	D003	36902109	DIODE 30D2FC	4
D004					
		***	TRANSFORMERS	***	
PT001			45066206	POWER TRANSFORMER	1
		***	RELAYS & SWITCHES	***	
			65904472	POWER SW EST15709V	1
		***	PWB ASSYS	***	
			81423S01	POWER SUPPLY PWB ASSY	1
		***	ELECTRICAL PARTS & MISCALLENEOUS PARTS		***
F101			66671003	FUSE1A T 250V SEMKO 20MM	1
F001			66671022	FUSE3.15AT250V SEMKO 20MM	1
			71903045	HOLDER/FUSE	4
		***	APPEARANCE PARTS	***	
			16875531	SCREW M3*8*15BF	2
			16876081	SCREW STB3*8*15BF	1
A010			18292501	CLAMPER WIRE	1
		***	CAPACITORS	***	
C001	C002		42019575	C/CERAMIC 500V 0.01UF	2
C612			42199001	C/CERAMIC 50V 0.1UF	1
C101			42899021	C/METAL FILM 250V 0.022UF	1
C613			439J3024	C/ELEC 16V 10UF	1

MODEL : POWEP UNIT PWB ASSY

SYMBOL		PARTS NO	DESCRIPTION	QTY
C003		43910149	C/ELEC 10000UF 25V	1
C007		43910150	C/ELEC 4700UF 25V	1
C006		43993056	C/ELEC 35V 470UF	1
C004	C005	43993083	C/ELEC 63V 220UF	2
PC01		70803027	POWER CORD (CEE)	1

MODEL : MECHANISM ASSEMBLY

SYMBOL	PARTS NO	DESCRIPTION	QTY
B074	36904255	LED GL450	1
B070	65907086	REC SAFETY SW.	1
B076	65907087	CASSETTE IN SW.	1
B059	82417BC1	TU. SLANT BASE SASSY	1
B060	82417PA1	ACE HEAD SASSY	1
B077	82423AH1	ROTARY DRUM SASSY (PAL2H)	1
B072	79501073	FE HEAD	1
B055	79502062	CAPSTAN MOTOR	1
B056	79762067	BRAKE SOL ASSY	1
B001	16177842	TENTION REG. ARM ASSY	1
B002	16177851	TENSION BAND ASSY	1
B071	16177861	IP ROLLER ASSY	1
B003	16177871	S. SOFT BRAKE ARM ASSY	1
B004	16177881	TU. SOFT BRAKE ARM ASSY	1
B005	16177922	LOADING UP ASSY	1
B006	16177932	LOADING LOW ASSY	1
B007	16178002	C.BRAKE ASSY	1
B008	16178041	R. SOFT BRAKE ASSY	1
B009	16178051	TU. REEL DISK ASSY	1
B010	16178061	S. REEL DISK ASSY	1
B011	16178173	R.DRIVE ASSY	1
	16178193	BASE PLATE ASSY	1
B066	16178361	PINCH ARM UNIT ASSY	1
B013	16178371	BRAKE ARM(R) ASSY	1
B014	16178381	BRAKE ARM(L) ASSY	1
B015	16178392	MODE GEAR ASSY	1
B016	16178413	REVERSE ARM ASSY	1
B017	16178421	REVERSE DRIVE ARM ASSY	1
B069	16178453	MODE CAM ASSY	1
B067	16178483	PINCH RINK PLATE ASSY	1
B018	16287641	NUT	4
B019	16287921	MINI CLAMP	1
B029	16534121	COLLAR	2
B030	16534231	FRANGE	4
B031	16534251	COLLER	2
B032	16534262	PIN	1
B040	16574771	LEVER SPRING	1
B033	16578692	SPRING	1
B034	16578701	SPRING	1
B035	16578921	SPRING	1
B036	16578941	SPRING	1
B037	16578972	GUIDE PIN SPRING	2
B038	16579011	SPRING	1
B039	16579021	SPRING	1

MODEL : MECHANISM ASSEMBLY

SYMBOL	PARTS NO	DESCRIPTION	QTY
B041	16579041	SPRING	1
B042	16579172	SPRING	1
B068	16579261	PINCH LINK SP.PLATE	2
B045	16627851	SPACER 2*4*0.5T	1
B046	16628731	SPACER	2
B047	16629291	SLIT WASHER	1
	16875531	SCREW M3*8*15PF	1
B053	16876781	SCREW,WS M2.6*6*15BF	3
B057	82423AA1	HEAD DRUM SASSY(PAL2HEAD)	1
B020	16442101	GUIDE ROLLER	6
B021	16442111	GUIDE ROLLER HOLDER	3
B022	16442121	GEAR (1)	1
B023	16442131	GEAR (2)	1
B024	16442161	DRIVE BELT	1
B025	16442211	LEVER	1
B026	16442222	LEVER	1
B027	16443362	GEAR	1
B073	16443513	LED HOLDER	1
B028	16444372	G.P CAP	1
B044	16579911	SPRING (REV.ARM)	1
B049	16629382	SLIT WASHER	2
B050	16629392	SLIT WASHER	1
B051	16629412	SLIT WASHER	2
B052	16629422	SLIT WASHER	1
	16629601	UL TUBE	1
B048	16629661	SLIT WASHER	1
B075	72377261	PWB LED PWV-726	1
B058	82417BB1	S. SLANT BASE SASSY	1
B061	82417PM1	MODE SENSOR SASSY	1
B062	82417PR1	REEL SENSOR SASSY	1
B012	16178301	EARTH PLATE S.A.	1
B043	16579351	SPRING (C)	1

MODEL : CHASSES ASSEMBLY

SYMBOL	PARTS NO	DESCRIPTION	QTY
	*** PWB ASSYS ***		
	81417N01	TIMER-SUB PWB ASSY	1
	81417W01	EVER 5V TR SASSY	1
	81417Z01	DRUM JANCTION SASSY	1
	81423S01	POWER SUPPLY PWB ASSY	1
PAC5	81424K01	FUNCTION PWB ASSY	1
PAC1	81437B01	VIDEO PWB ASSY	1
PA03	81437E01	TUNER/IF PWB ASSY	1
PA06	81437R01	POWER UNIT PWB ASSY	1
PA02	81438D01	SYS/SER/AUD/REG PWB ASSY	1
PA04	81438F01	TIMER PWB ASSY	1
A001	16178921	FRONT PANEL ASSY	1
A002	16375771	Top Cover	1
A003	16441621	Preset Cover	1
A004	16443832	FRONT COVER	1
A005	16475651	TRACKING KNOB	1
A006	16573831	FRONT COVER SPRING	1
A007	16628501	SHEET	1
A008	74900791	KNOB,FINE TUNING	1
A009	16177653	CASSETTE HOUSE ASSY	1
A010	15292501	CLAMPER WIRE	1

MODEL : CASSETTE HOUSING ASSEMBLY

SYMBOL	PARTS NO	DESCRIPTION	QTY
A301	16441731	Loading belt	1
A302	35290300	Photo TR PT352	2
A303	65330045	Tact Switch	2
A304	79502029	DC Micro motor RF-280R-10350	1
A305	67012024	Cassette house lamp N901	1
A306	16573761	Mirror	1
A307	16441741	Hinge	1

MODEL : REMOTE CONTROL UNIT

SYMBOL	PARTS NO	DESCRIPTION	QTY
D1	79V05155	Infrared emitting diode	1
D2	36001009	Diode 1S2473	1
D3	36001009	Diode 1S2473	1
D4	36001009	Diode 1S2473	1
IC1	37051442	MOS UPD1943G (TRM)	1
TR1	35542943	TR, 2SC2021 Q, R, S	1
TR2	35953017	TR, 2SC-1652	1
U001	18920731	Case (A), FA11A8601	1
U002	18920741	Case (B), FA11A8701	1
U003	18920751	Case (C), FA11A8801	1
U004	18920761	Filter FA58A1401	1
U005	18921601	Plate	1
U006	18921611	Key top rubber	1
U007	18924341	Battery terminal	2
U008	18924351	Battery terminal	1
CF1	18924361	Ceramic OSC KBR-455BTL	1

79799286 WIRELESS REMOTE CONTROL UNIT RB-91EP